ESSER Funding and the Post-Pandemic Experiences of Montana Schools

Christiana Stoddard and Carly Urban

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About the Authors

Dr. Christiana Stoddard is a Professor in the Department of Agricultural Economics and Economics at Montana State University. She holds a PhD in Economics from the University of California, Santa Barbara. Her research uses advanced applied microeconomic and econometric approaches to evaluate the impact of specific policies on individual financial, health, and educational outcomes. This has included work on teacher labor markets, student loans, financial education, for-profit colleges, and various other education and health policies. Her research has been published in leading economics journals and several peer-reviewed interdisciplinary journals. She was a Visiting Scholar at the Opportunity and Inclusive Growth Institute at the Minneapolis Federal Reserve, consulted for many state governments on education policy, and is currently a Visiting Scholar with the Consumer Finance Protection Bureau.

Dr. Carly Urban is a Professor in the Department of Agricultural Economics and Economics at Montana State University, a Research Fellow at the Institute for Labor Economics (IZA), and an Academic Fellow at the TIAA Institute. Her research expertise lies in economic analyses of public policies, where she has largely studied school-based education interventions and public policies relating to personal finances (e.g., mortgages, education, safety net policies, and others). In addition to publishing in top peer-reviewed journals, her work has been covered by mass media outlets such as NPR, TIME, the Wall Street Journal, and the New York Times. She has been a Visiting Scholar at the Federal Reserve Board, the Consumer Financial Protection Bureau, and the FINRA Investor Education Foundation. She holds a BA in Economics and International Affairs from the George Washington University and an MA and PhD in Economics from the University of Wisconsin-Madison.

Executive Summary

The COVID-19 pandemic led to significant challenges for schools during its height and as students and schools have rebuilt and recovered. The federal government provided Educational Stabilization Funds to assist states in these efforts. Montana was awarded almost $600 million in Elementary and Secondary Emergency Relief (ESSER) over three waves beginning in June 2020 and running through September 2024. As of May 31, 2024, districts had spent 76% of the funds.

This report uses data from federal and state sources to track how districts spent the emergency COVID-19 funds and whether the type of spending varied by district characteristics. The report then examines how the pandemic resulted in learning losses in Montana and whether those learning losses varied by the type of spending changes that occurred with the injection of ESSER funds.

We find that most districts used the bulk of the ESSER funds to improve instruction and instructional services. Some districts spent the ESSER aid on immediate health-related facility upgrade needs, but aggregate statewide capital, operations, and maintenance spending did not substantively change. The largest changes were (1) hiring significantly more teachers, resulting in a lower student-teacher ratio, and (2) providing additional tutoring during school, in after-school programs, and in the summers. Districts also added mental health professionals and nurses and hired more paraprofessionals and instructional aides (especially during the 2021-2022 AY).

The 2021-2022 and 2022-2023 AYs saw a sharp decline in student attendance and significant learning losses for elementary and middle school students. However, schools that added teachers experienced smaller drops and larger rebounds in student achievement. Math proficiency in early grades returned to pre-pandemic levels in schools that hired more teachers, but the rebound in schools that were unable to add teachers was more modest. Reading proficiency for early grades and both reading and math proficiency levels for middle grades continued to be lower than pre-pandemic levels, but the declines were smaller in schools that added teachers.

The schools able to add teachers had higher proficiency levels to begin with, leading to larger gaps in student proficiency across schools in the post-pandemic period. Some districts, especially in more remote parts of the state, had immediate needs to upgrade infrastructure to improve the health and safety of students. This expense may have limited their ability to add teachers. Research suggests that improvements to health and air quality are likely to have positive impacts on student and teacher well-being in the long run, but, at present, these schools are further behind.

We propose five policy recommendations as Montana continues to move forward: (1) conduct regular health- and safety-related school facility assessments; (2) provide designated funding for health-related upgrades for under-resourced schools; (3) closely monitor student proficiency and absences, particularly in schools or for students that have not recovered from learning losses; (4) provide targeted individualized-instruction funding for schools with persistent pandemic learning losses or for schools who can demonstrate proficiency drop after ESSER funding ends; (5) monitor student attendance rates and provide support to increase student engagement. Details on our recommendations are on page 14.

Introduction

Over the past four years, the federal government has provided Educational Stabilization Funds to assist states both during and after the COVID-19 pandemic. Known as Elementary and Secondary Emergency Relief (ESSER), the federal revenues came in three waves. The first was funded through the 2020 Coronavirus Aid Relief and Economic Security (CARES) Act, the second was the 2021 Coronavirus Response and Relief Supplemental Appropriations (CRSRA) Act, and the third wave was funded by the America Rescue Plan (ARP). These funds are scheduled to be fully expended by September 30, 2024. Throughout this report, we refer to all three waves as the COVID-19 funds or the ESSER funds, rather than using the names of the specific acts.

The federal government awarded Montana almost $600 million in ESSER funds. Additional federal funds were for a Governor's Emergency Relief (GEER) Fund ($12.6 million) and $24.9 million for Emergency Assistance to Non-Public Schools (EANS). The bulk (90%) of ESSER funds were awarded to districts proportional to Title I funds for disadvantaged students, with the remaining 10 percent of the state's reserve fund to be used as the state education agency determined. In Montana, nearly all districts were awarded some ESSER funds either directly or through the state reserve fund.[1]

This report focuses on the uses of the ESSER funds by regular public school districts. In June 2020, the Montana Office of Public Instruction (OPI) immediately began disseminating emergency COVID-19-related federal funds to allow schools to prepare and respond to the pandemic—both in terms of safety and potential learning losses. As of May 31, 2024, 76 percent of the funds have been spent.[2] Table 1 shows the amount of funds received in each wave.

Table 1: ESSER funds awarded to Montana and percent expended by May 2024.

	FY2021	FY2022	FY2023
Total awarded	$41,295,230	$170,099,465	$239,803,994
Total spent	100%	100%	62.8% as of May 2024 Funds are available through Sept 2024

Source: ESSER tracking on https://covid-relief-data.ed.gov/profile/state/MT. Accessed July 1, 2024.

In this report, we use state and federal datasets to understand how COVID-19 emergency school funding changed the landscape of school spending in Montana.[3] For more on each dataset, see Appendix G.

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[1] Only 26 regular public-school districts were not awarded some funds, 25 of which had fewer than 50 students and one that had about 75 students.

[2] https://covid-relief-data.ed.gov/profile/state/MT Last accessed July 1, 2024.

[3] Data sets: Common Core of Data and District School Finance Survey (F-33) provide district characteristics, spending, and staffing both before and after the receipt of funds. Districts also reported their uses of funds requested in the E-Grants system.

How did ESSER funds impact district revenue and spending?

How did the funds change district revenues? Figure 1 shows that **the infusion of federal COVID-19 funds led to a sharp increase in revenues per pupil**. This was because neither state nor local funds decreased when additional federal funds became available from FY2019 through FY2022.[4]

Figure 1: State, local, and federal revenues per pupil, FY2016-FY2022
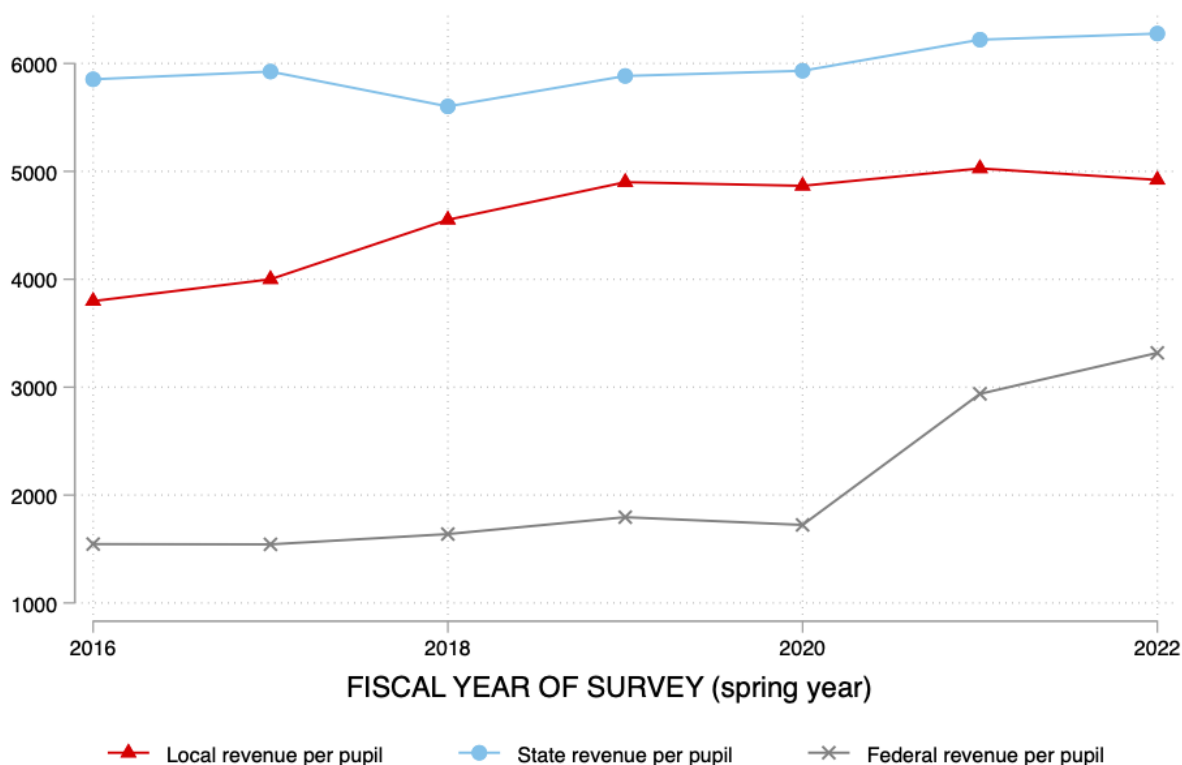
Source: U.S. Department of Education, National Public Education Financial Survey (F-33)
https://nces.ed.gov/ccd/ccddata.asp This dataset includes the financial information for all public school districts that is reported annually to the U.S. Department of Education.

In what main areas did districts spend the federal funds? There are two ways to answer this question. The first is to look at how school districts categorized the use of funds in their expenditure requests. The federal government had specific categories for eligible uses of the monies. These categories were (1) addressing physical health and safety; (2) meeting students' academic, social, emotional, and other needs; (3) mental health supports for students and staff; and (4) operational continuity and other allowed uses. Districts selected the categories in their requests. In the first year (FY2021), nearly all spending was classified as operational continuity, although this was partly due to the new system with the reporting rule still being worked out. A review of E-Grants showed many districts spent on one-time

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[4] FY represents the fiscal year. AY represents the academic calendar year.

health-related expenses, such as thermometers, masks, and other safety precautions. Figure 2 shows that in the next two years, **districts reported using about half of the funds for meeting students' needs and about a quarter of the funds for health and safety**.

Figure 2: District categorization of ESSER funding requests
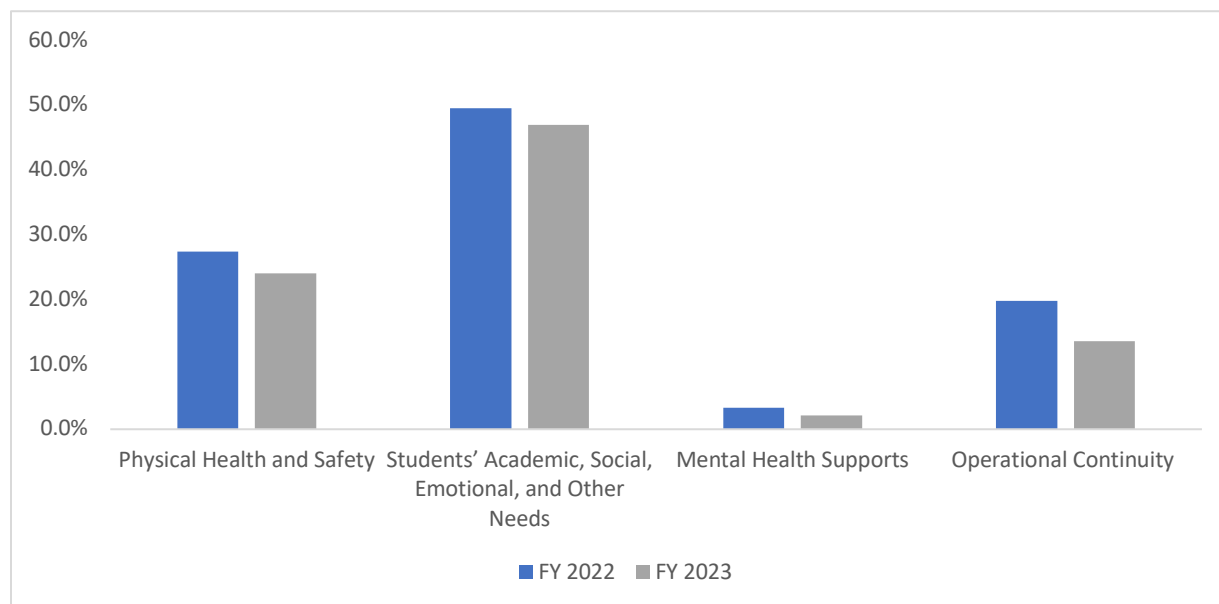
Source: E-Grants requests by districts reported to the U.S. Department of Education. FY2022 data are found on the website https://covid-relief-data.ed.gov/profile/state/MT (Accessed July 1, 2024). The FY2023 data were provided to the authors by the Office of Public Instruction. The graph shows the breakdown for the first two waves of funds (ESSER I and ESSER II), but ESSER III spending totals were not finalized by the date of this report.
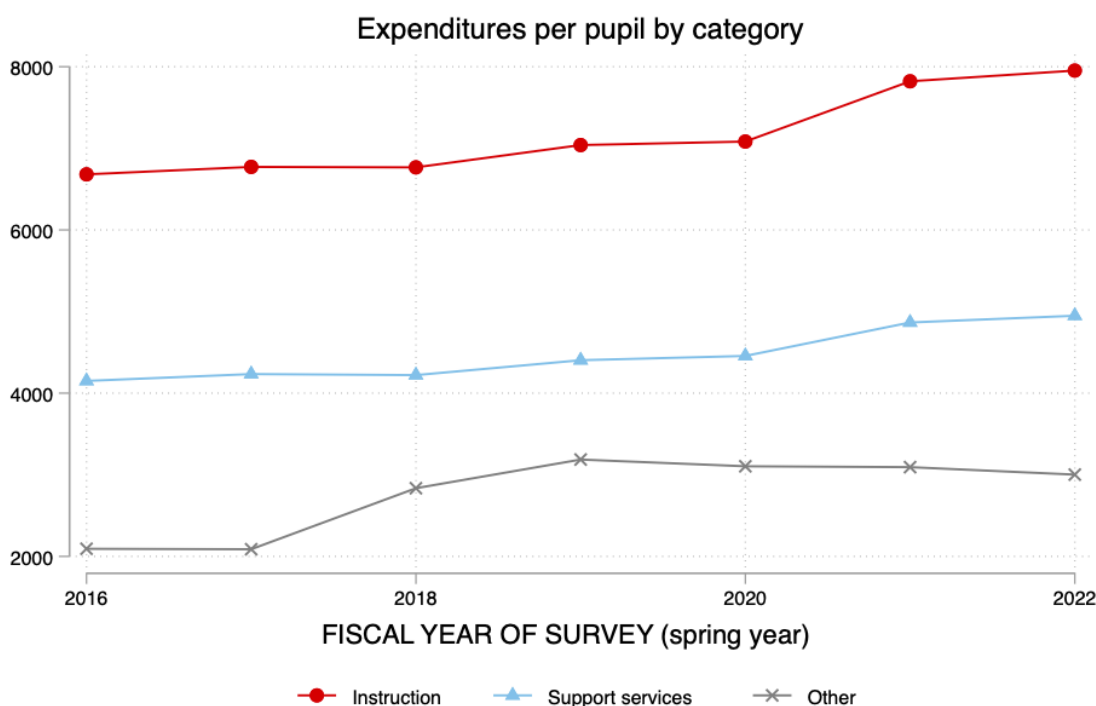
From FY2020 through FY2022, districts cumulatively requested 60 percent of the COVID-19 disbursements for use on salaries, benefits, or supplies directly related to instruction. Another 20 percent of the funds were disbursed for instructional support services (i.e., the administrative, guidance, health, and logistical support services that directly support instruction).[5] Another 11 percent of the ESSER funds were allocated to capital projects, with the remaining 9 percent disbursed for other types of services, operations, and maintenance.

These expenditure requests by districts are one way to track how the money was spent. However, school districts may have used COVID-19 funding to pay for things they normally would have used other revenue sources to pay for, thereby freeing up resources to purchase other items. Thus, a second way to track how the COVID-19 funding was spent is by using the school finance totals for all spending—regardless of revenue source—in all districts in the state, both before and after the federal funds were allocated.

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[5] Services for attendance, counseling, speech student tracking, and placement are a few examples of these services. Expenditures on transportation or food services would not be included in instructional services.

Figure 3 shows that **instruction and instructional support significantly increased following the federal infusion**. Total spending was basically unchanged in this period for all other categories of spending—capital, operations and maintenance, and non-instructional support services.

Figure 3: Spending per pupil on instruction, instructional support services, and all other categories

Expenditures per pupil by category

FISCAL YEAR OF SURVEY (spring year)

— Instruction   — Support services   — Other

Source: U.S. Department of Education, National Public Education Financial Survey (F-33) https://nces.ed.gov/ccd/ccddata.asp This dataset includes the financial information for all public school districts that is reported annually to the U.S. Department of Education.

The increase in instructional expenditures led to higher staffing levels. Figure 4 shows that by the spring of 2023, public schools in Montana had more than 300 additional teachers compared to the spring of 2020. Figure 4 also shows that districts hired more mental health professionals and nurses. During the 2021-22 school year, schools also used more instructional aides; however, they reverted to normal levels afterward.
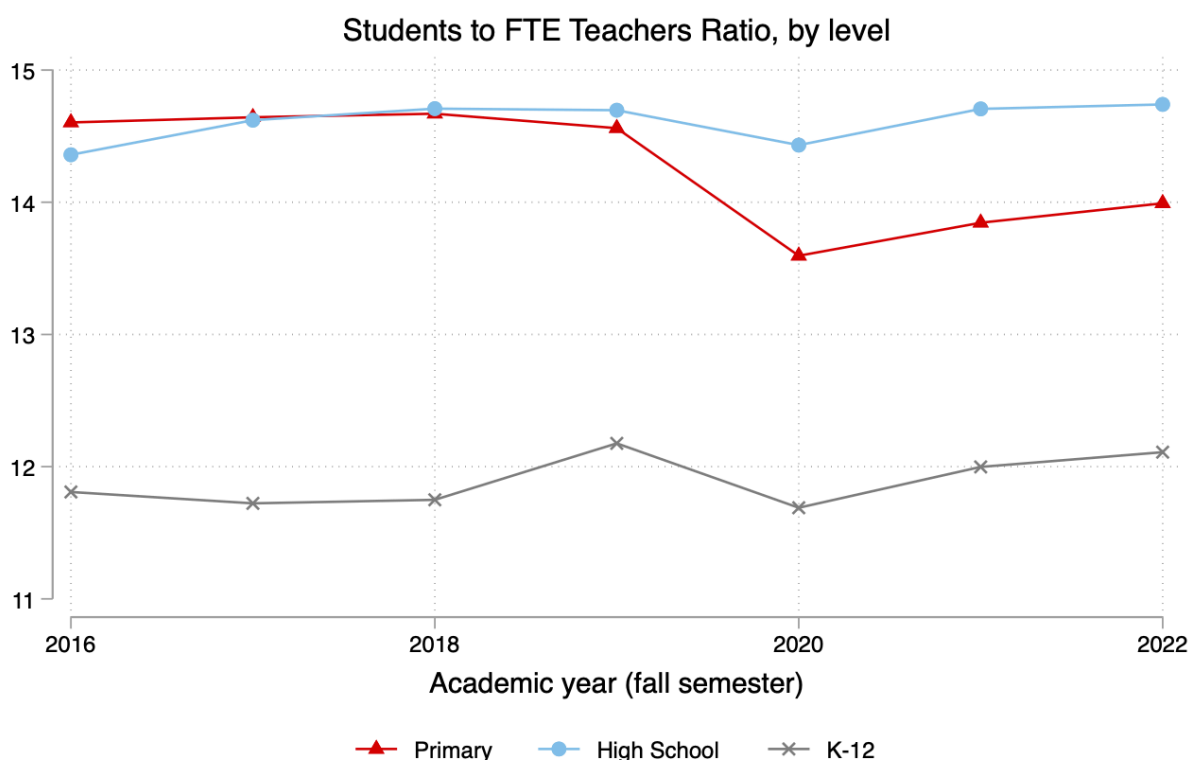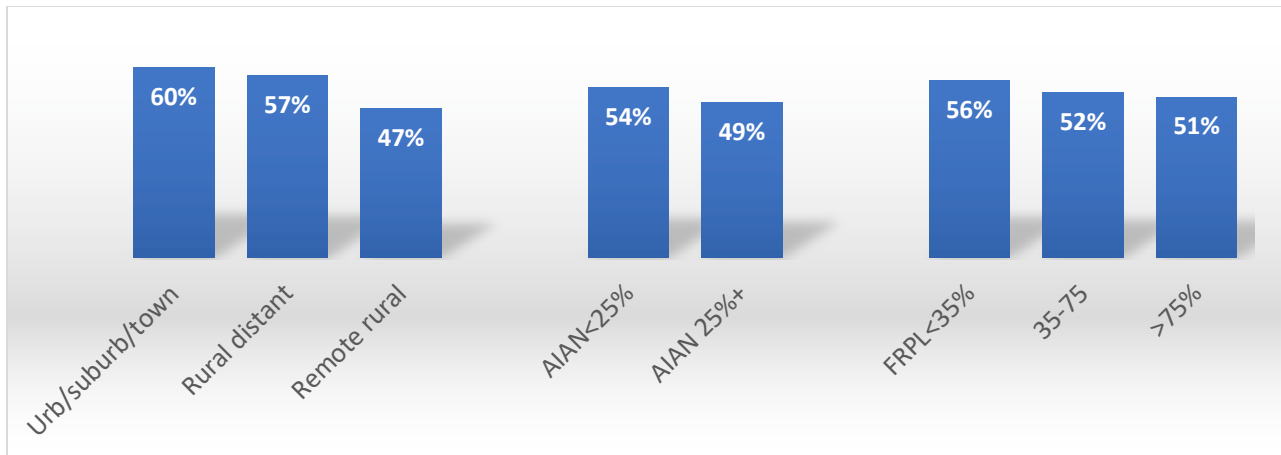
Figure 4: Trends in staffing by category

Source: U.S. Department of Education, Local Education Agency (School District) Universe Survey Data
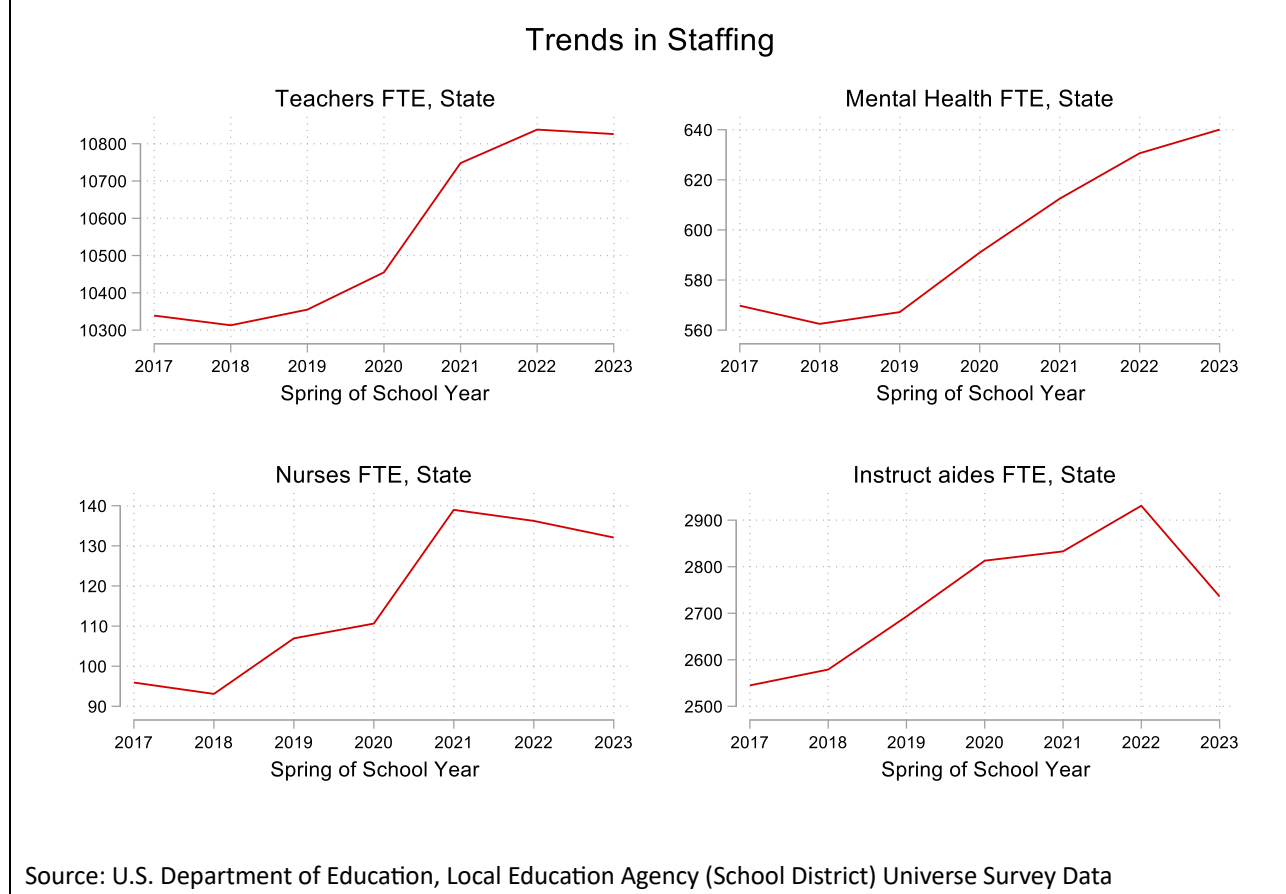
How did different types of schools and districts use the funds?

What were the differences in staffing by grade level? Not surprisingly, the increase in teacher hiring led to much smaller pupil-teacher ratios. Figure 5 shows that **elementary school districts in particular had large reductions in the number of students per FTE teacher**, a trend that continues. In contrast, high schools had an initial drop in the pupil-teacher ratio, but class sizes subsequently rebounded to pre-pandemic levels.

Figure 5: Trends in pupil-teacher ratios by grade level of school district

Students to FTE Teachers Ratio, by level

Source: U.S. Department of Education, Local Education Agency (School District) Universe Survey Data

What were the differences in staffing by other district characteristics? Many spending patterns were similar across districts of different sizes and in different parts of the state. However, there were some differences in which types of districts hired more teachers. Districts with less than 50 students might not have had the need or capacity to hire additional teachers, and the districts that did not receive ESSER funds were very small (though some small districts did receive ESSER funds). As a result, we focus on districts with at least 50 students, all of which received some ESSER funds. Figure 6 shows the percentage of these districts who added at least one FTE teacher between 2019-20 and 2022-23.[6] These are shown based on rurality,[7] the percent of students who are American Indian or Alaska Native (AIAN), and the percent eligible for free and reduced-price lunch (FRPL) in 2019.

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[6] Additional FTE were determined by comparing teacher FTE in the 2019-20 and 2022-23 waves of the Common Core of Data. This dataset is described in more detail in Appendix C.

[7] The details of our rurality measure are explained in Appendix C.

Figure 6: Percent of districts with 50+ students adding teachers, by district characteristics

The largest gap in hiring was between districts in the most remote parts of the state (47 percent hired at least one additional teacher) and other districts (57-60 percent hired additional teachers). Consequently, as Figure 7 shows, **student-teacher ratios did not change much in the more remote districts, while they fell in other parts of the state.**

Figure 7: Trends in pupil-teacher ratios by urbanicity
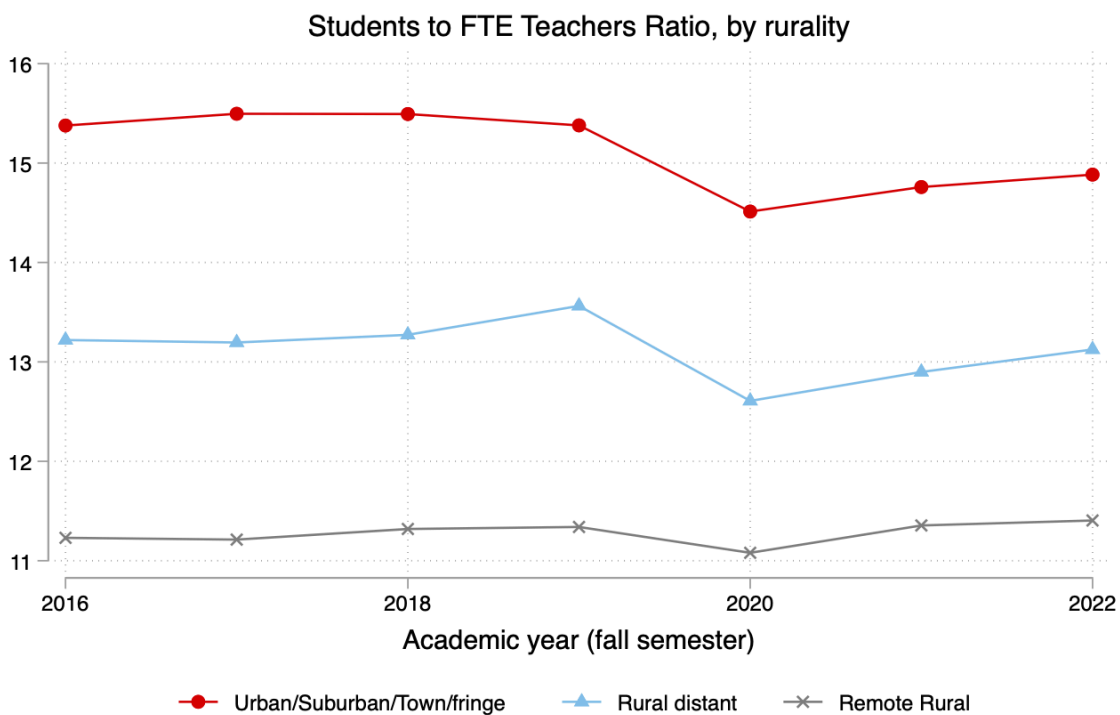
Source: U.S. Department of Education, Local Education Agency (School District) Universe Survey Data. A full map of schools by rurality definitions is in Appendix C.

What were the other main district needs? Some districts did not hire additional teachers because they were small and had no need or because student enrollment was declining. Others struggled to hire in the tight post-pandemic labor market. **Our analysis of the spending requests revealed that some districts used the funds specifically for infrastructure improvements to address pressing health and safety needs.** These needs took priority over hiring additional teachers.

A few examples illustrate how health and safety-related infrastructure and labor market issues affected district spending choices. In a qualitative analysis using publicly available E-Grants data, we identified districts that had to address significant health and safety concerns, often related to long-standing infrastructure issues. These improvements included updates to HVAC systems, improvements to ventilation (e.g., by replacing windows, fixing or replacing roofs, etc.), or removing items (like carpeting) that were difficult to clean. A few districts had even greater challenges. For example, the Pryor Elementary School District could not meet the Centers for Disease Control and Prevention's pandemic air quality guidelines, as windows did not open, there were no air vents in classrooms, there was asbestos in the air ducts and boiler room, and the building housed hazardous mold. The district requested to use ESSER funds to make these significant renovations. Similarly, the Upper West Shore Elementary School District requested a large proportion of ESSER funds be spent on asbestos abatement and improving their water and septic system to provide a healthy and clean water supply. The Hot Springs K-12 School District requested the funds to replace a leaky roof and moldy insulation to reduce the risk of respiratory issues. Other districts had hiring difficulties that resulted in their use of the funds for non-instructional purchases. For example, the Laurel Elementary School District faced labor market challenges in finding bus drivers with commercial driver's licenses. This led to the purchase of a 12-passenger van for transportation.

As we show in the next section, schools with imminent needs that prevented them from hiring additional teachers may have missed out on the opportunity to mitigate learning losses.

Assessing the Impact of COVID-19 on Students

What challenges are students facing in the post-pandemic period? To gauge the impact of the federal COVID-19 funds and what will happen when they end, it is important to consider the current educational context. We do this using detailed de-identified administrative student records in Montana to detect patterns in student behavior, including attendance and achievement.

We find that **the COVID-19 pandemic has resulted in large and sustained increases in student absences** (Figure 8). Compared to the 2018-19 AY, the average student in grades 1-4 missed three more days of school in the 2022-23 AY; the average student in grades 5-8 missed two more days of school; and the average student in grades 9-12 missed four more days of school. Absences temporarily declined in the 2019-20 AY, but this is likely due to difficulty in tracking absences when schools moved to remote options at the height of the pandemic. The 2022-23 level in absences is alarming: the average high school student now misses 10 percent of days—the standard threshold for chronic absenteeism.

Figure 8: Trends in absences by grade
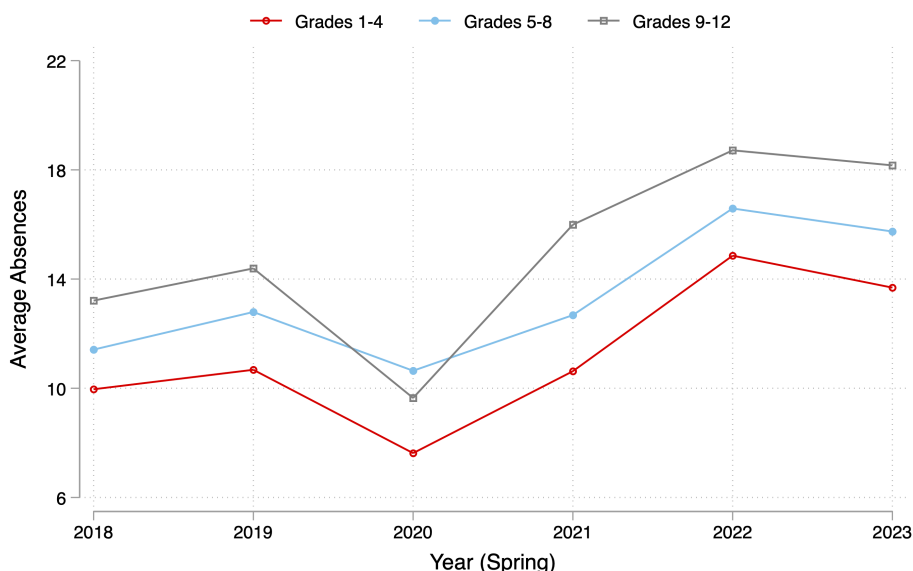
Source: Data come from GEMS academic records of all Montana public school students in grades 1-12. Absences equal days enrolled minus days present. These are top coded, so the maximum days present can be 180.

Absences for disadvantaged students have shown an especially sharp increase. The average student in a school where over 50 percent of students received FRPL in 2019 missed nearly 19 days of school in the 2022-23 AY (Figure B2). Absences are lower for students in schools with lower rates of students receiving FRPL, though the increase in absences post-pandemic is similar to the overall trend in Figure 8. AIAN students missed an average of 26 days per year post-pandemic, approximately six days more than the 2019-2020 AY (Figure A1). In contrast, patterns in absences did not vary significantly based on rurality or for special education students (Figure C2, Figure E1).

Using data on the Standardized Balanced Assessment Consortium (SBAC) exam, we find that **student proficiency levels declined and have not yet rebound in most schools**.[8] In grades three and four 45 percent of schools had lower math and reading proficiency rates in the 2022-23 AY than the 2018-19 AY, 30 percent of schools had lower math or reading proficiency rates across the same time span; the remaining 25 percent of schools had fully rebounded in both subjects. A similar trend exists for grades seven and eight: 55 percent of schools did not see proficiency rates rebound in math or reading, 27 percent of schools rebounded in only one of the two subjects, and 18 percent of schools rebounded in both subjects. These results support additional monitoring of pandemic learning losses.

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[8] More on these data can be found in Appendix G.

How were patterns of district spending related to learning losses?

Spending on teachers

To assess the effectiveness of spending on instruction, we examined trends in achievement separately for schools that hired additional teachers and schools that did not.[9] We find that **schools that hired more teachers experienced smaller learning losses than schools that did not make these hires**. Figure 9 shows that the fraction of students proficient in both reading and math rebounded more in schools that added teachers than those that did not. This is true for both grades 3-4 (Panel A) and 7-8 (Panel B). Rebounds are also larger for the lower grades, where the hiring was concentrated.

The injection of funding into teachers in elementary schools resulted in students getting more individualized attention, something research has consistently found to improve student outcomes. The patterns we see are consistent with research showing that hiring more high-quality teachers and having more individualized instruction can be one of the most effective uses of school spending (Handel & Hanushek, 2023, Lee, 2018; Chetty, Friedman, and Rockoff, 2014).

Research also shows that individualized tutoring that uses teachers and other paraprofessionals (like instructional aides) significantly improves student achievement, with particularly strong effects in early grades (Nickow et al. (2020); Guryan et al. (2023); Bonesronning et al. (2022)). The E-Grants data show that many Montana districts used ESSER money to expand tutoring efforts after school and on weekends. One innovative approach—particularly in remote areas where it could be difficult to hire new tutors—was to pay existing teachers for individualized tutoring outside of school hours.

These graphs show that the schools that hired additional teachers during the pandemic were also the schools that *already* had higher proficiency levels in the 2017-18 and 2018-19 AYs. For example, 50 percent of third- and fourth-grade students were proficient in math in the 2018-19 AY in schools that added teachers during the pandemic, whereas only 43 percent of third- and fourth-grade students were proficient in math in schools that did not add teachers during the pandemic in the same year. The gaps are larger in reading and in grades 7-8. **Thus, schools that started with stronger footing before the pandemic were more likely to use the injection of funding to hire additional teachers; subsequently, they had fewer pandemic learning losses**.

The expenditure requests illustrate that in addition to pressing infrastructure expenses for health and safety improvements, more disadvantaged and remote districts had difficulty retaining teachers and staff in this period. Some districts invested in retention. For example, the Geraldine K-12 District requested funds for daycare for teachers, while the Lodge Grass and Wyola Elementary districts funded incentives for staff and teacher attendance.
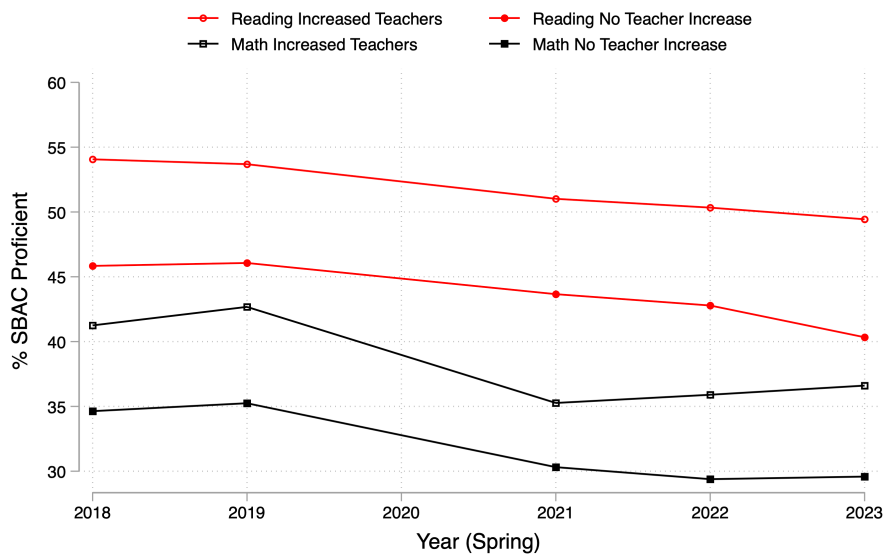
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[9] Additional FTE were determined by comparing teacher FTE in the 2019-20 and 2022-23 waves of the Common Core of Data. This dataset is described in more detail in Appendix C.

Figure 9: Trends in student math and reading proficiency by grade and teacher hiring

Panel A: Grades 3-4
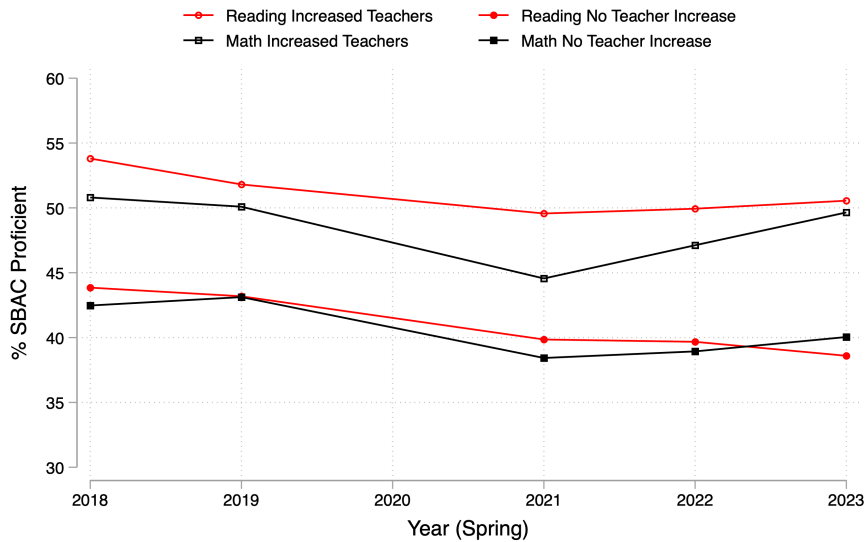
Panel B: Grades 7-8

Source: Data come from GEMS academic records of all Montana public school students. Proficient students score at level 3 (proficient) or level 4 (advanced) on SBAC reading or math. Panel A includes third- and fourth-grade students; Panel B includes seventh- and eighth-grade students. Schools that increased teachers did this beginning in the 2020-21 AY.

Spending on infrastructure

Because infrastructure projects are so varied and effects take time to materialize, it is not possible to evaluate the effect of these projects on student outcomes at this point. However, improvements to air filtration are likely to lead to long-run improvements in student and teacher well-being and productivity. Recent research also shows that capital improvements—particularly those that improve HVAC or remove pollutants—can lead to improved test scores (Biasi et al 2024), especially in socio-economically disadvantaged schools. Some of this research shows that these effects accumulate over four to six years before registering as significantly positive effects (Jackson and Mackevicius, 2024). Other research shows even longer-term effects of improvements in school facilities on adulthood outcomes (Baron et al 2024). Although we are unable to track the impacts of facilities on academic outcomes in a short time span, districts did appear to make spending decisions that are in the interest of students.

Silver linings: high schools

In contrast to the learning losses for younger students, our analysis of high school learning losses using the ACT test taken by all eleventh-grade students in Montana shows that scores have completely rebounded to pre-pandemic levels. This is true for the average student and also applies to all groups based on gender, race/ethnicity, school poverty levels, and degree of rurality (See Appendix E). This could be in part because eleventh graders already had a strong foundation of education leading into the pandemic and remote learning was easier for older students to navigate.

Additional cautionary tales

The data surrounding learning losses highlight three additional trends to watch. First, we highlight that AIAN students saw alarmingly low and declining proficiency levels post-pandemic. These results are discussed in Appendix A. Second, we find that schools in more remote areas had slightly larger learning losses than schools with more access to a connected town or city. However, these differences are not as large as other gaps we highlight. These results are in Appendix C. Third, we find that most of the proficiency declines come from female students. These results are discussed in Appendix D.

Discussion

Post-pandemic, students across all grades are missing school at alarming rates. This trend appears to represent a new normal. The average level of absences among disadvantaged students—students from schools with higher poverty rates and AIAN students—now ranges between 19 and 26 days a year.

The injection of federal emergency COVID-19 funds allowed schools to flexibly determine the best use of the money. Nearly 60 percent of schools reported using funds for instructional purposes. Staffing data confirm that there was an increase in the number of teachers beginning in the 2020-21 AY. Elementary schools saw the largest increase in teachers hired and consequently, the greatest reduction in student-teacher ratios. This trend was sustained through the 2021-22 AY. While middle and high schools increased their teachers as well, the increase was not as large nor was it sustained. Remote schools also added fewer teachers than more geographically-connected schools.

Learning losses have been smaller and less persistent in schools where teachers were added. Montana's experience is consistent with research finding that reducing student-teacher ratios by hiring additional teachers can improve student outcomes (Handel & Hanushek, 2023) and that tutoring and individualized instruction are particularly effective for increasing student learning (Bonesrønning et al, 2022; Guryan et al, 2023).

Some districts did not hire more teachers. Many of these districts used the funds for other imminent needs that directly affected student health and well-being. Examples of these needs included solving transportation problems, improving airflow, asbestos abatement, and mold removal. While these expenditures are likely to have long-run impacts on student and teacher well-being, the benefits are not immediately visible in terms of academic outcomes (Jackson and Mackevicius, 2024).

Policy Recommendations

Given our results, we make the following policy recommendations:

1. **Regular health and safety-related school facility assessments**. The COVID-19 pandemic brought to light infrastructure issues related to health and safety. The last state facilities assessment was in 2008.[10] We recommend the state begin a school facilities inspection every five years so that health and safety issues like mold, asbestos, and poor airflow can be addressed in a timely and cost-effective manner.

2. **Funding for health-related upgrades.** Ensure that the funding formula provides a transparent and easy-to-use funding mechanism for under-resourced districts to make facilities safety adjustments related to health and safety, such as air quality improvements.

3. **Closely monitor student proficiency and attendance. Focus on schools and student groups that have not recovered from learning losses and for schools losing significant ESSER resources.** Particularly close attention is warranted for AIAN students, female students, and students in high-poverty schools, as proficiency levels for these student groups remain below pre-pandemic levels. While some standardized test changes are being made in Montana, it is critical to maintain as much consistency as possible to accurately track progress toward recovery.

4. **Targeted support for schools with persistent pandemic learning losses or for schools whose proficiency falls after the end of ESSER funding.** One effective option would be to provide ongoing funds for tutoring or individualized instruction in schools that have not returned to their pre-pandemic proficiency levels. This individualized instruction could be done by new paraprofessionals or existing teaching staff. Districts where most student groups have recovered could be allowed to apply for funds if they can use data to demonstrate a specific need.

5. **Monitor student attendance rates and provide support to increase student engagement.** Attendance rates have not returned to pre-pandemic levels. Consider targeted funding for interventions designed to improve student attendance. These interventions should include evaluations. Tracking student attendance could help identify the most promising programs that improve student engagement.

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[10] The 2008 report is here:
https://leg.mt.gov/content/Committees/Interim/2007_2008/edu_local_gov/facilities_final_report_7_1_08.pdf.

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Appendices

Appendix A: Impacts in high AIAN districts/students

AIAN students had a greater increase in absences compared to White students. On average, AIAN students missed 25 days of school in the 2022-23 AY, compared to 13 days for White students.

**Figure A1: Trends in absences for AIAN and White students**
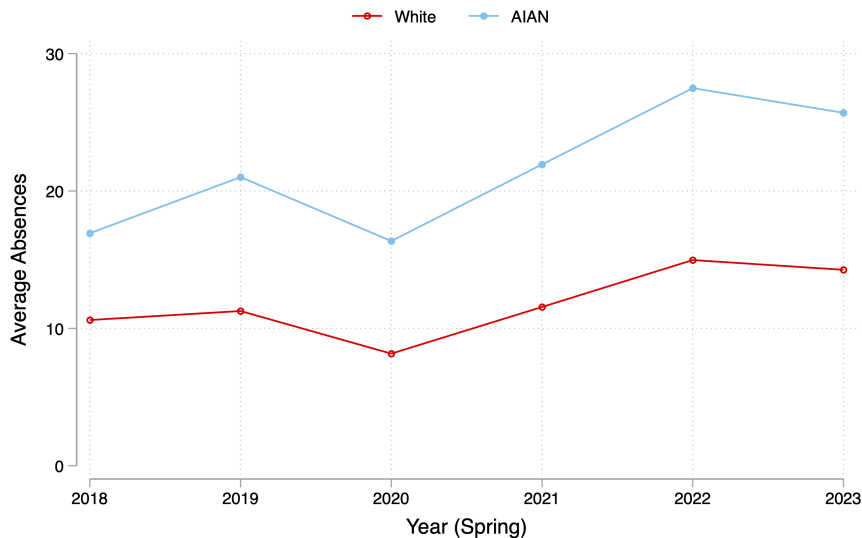
Source: Data come from GEMS academic records of all Montana public school students in grades 1-12. Absences equal days enrolled minus days present. These are top coded, so the most days present can be 180. AIAN designates American Indian/Alaska Native students.

AIAN student proficiency rates in math fell from 18 percent to 14 percent in grades 3-4 and from 10 percent to 6 percent in grades 7-8. Similarly, proficiency rates in reading for AIAN students fell from 19 to 15 percent in grades 3-4 and 19 to 14 percent in grades 7-8. These numbers are alarming, and they are potentially explained by the increases in absences among AIAN students (from 18 to 26 days). Devising strategies to improve COVID-19 learning losses and reduce absences among AIAN students should be an important priority.
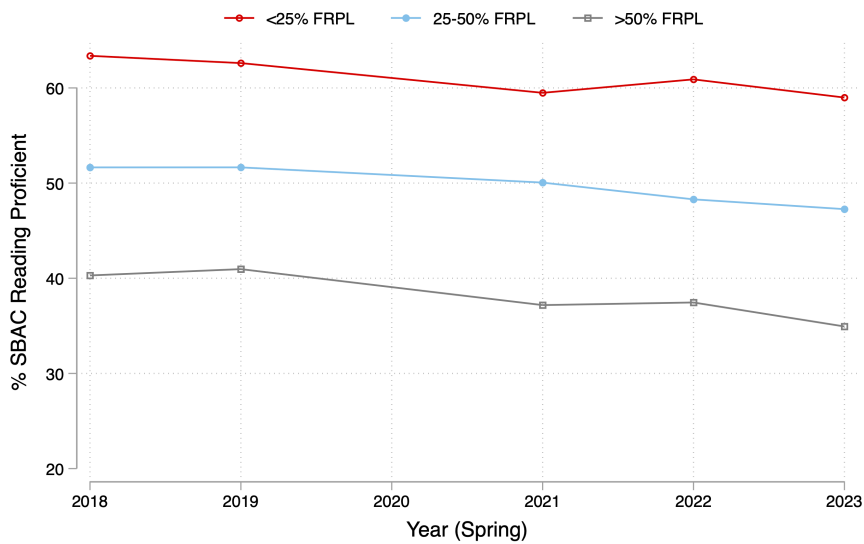
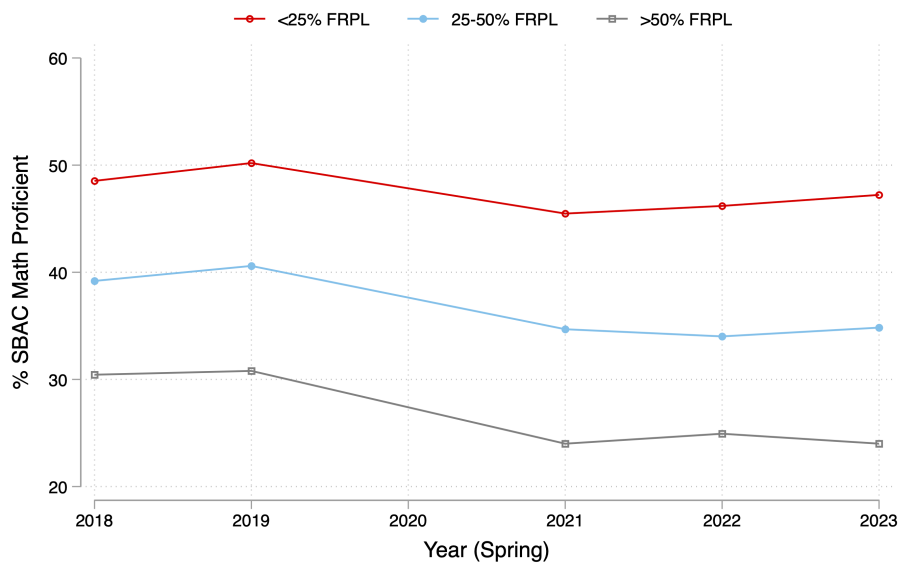**Figure A2: Trends in proficiency for AIAN students**
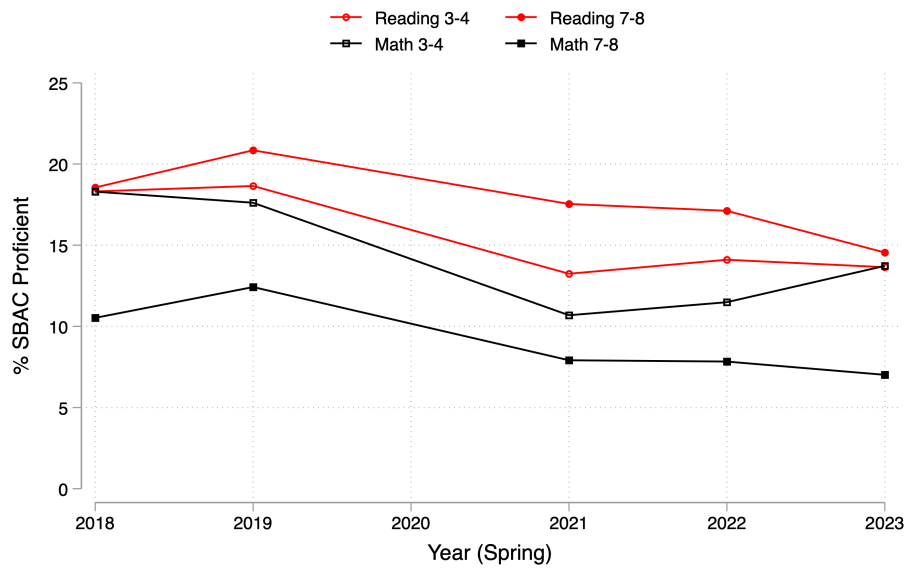
Source: Data come from GEMS academic records of all Montana public school students. Proficient students score at level 3 (proficient) or level 4 (advanced) on SBAC reading or math.

Appendix B: Impacts by FRPL

The percentage of students receiving FRPL—a marker for school poverty—also predicts the likelihood of adding teachers during the pandemic. Schools with the lowest FRPL rates in 2019 saw the greatest declines in student-teacher ratios, while schools with more than 50 percent of students receiving FRPL had much more modest declines in student-teacher ratios.

Figure B1: Trends in pupil-teacher ratios by FRPL

Source: U.S. Department of Education, Local Education Agency (School District) Universe Survey Data.
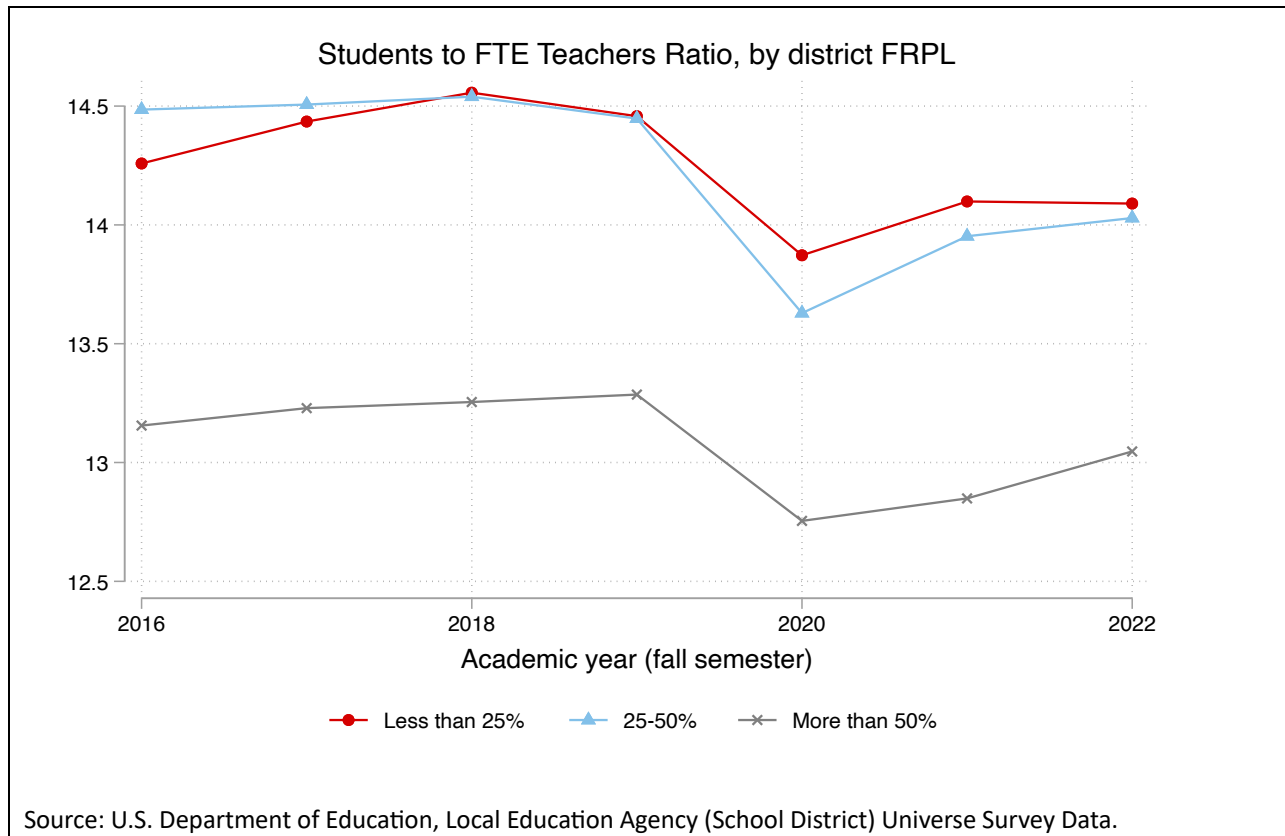
Figure B2: Trends in absences by school FRPL
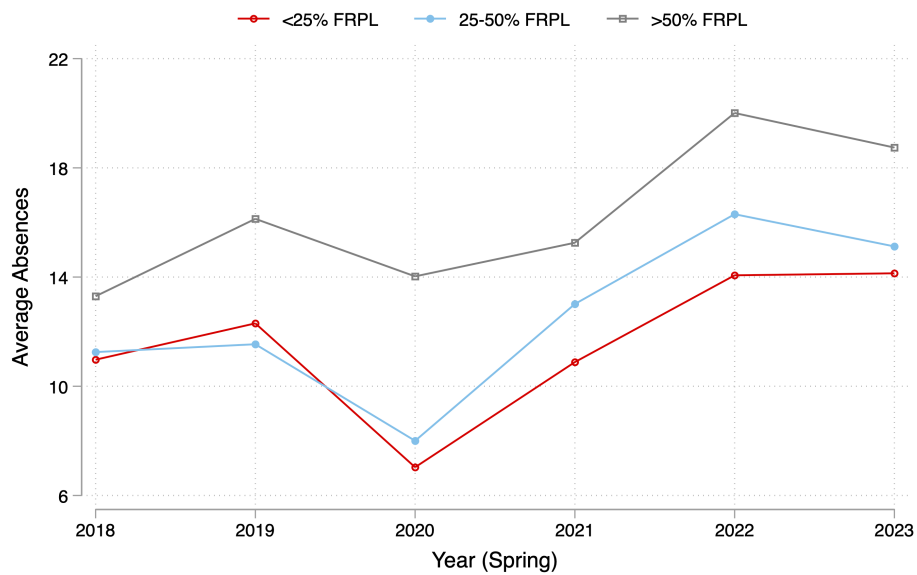
Source: Data come from GEMS academic records of all Montana public school students in grades 1-12. Absences equal days enrolled minus days present. These are top coded, so the most days present can be 180. FRPL is the percentage of students receiving free or reduced-price lunch in 2019.

Figure B3: Trends in student math and reading proficiency by FRPL, Grades 3-4

Panel A: Reading
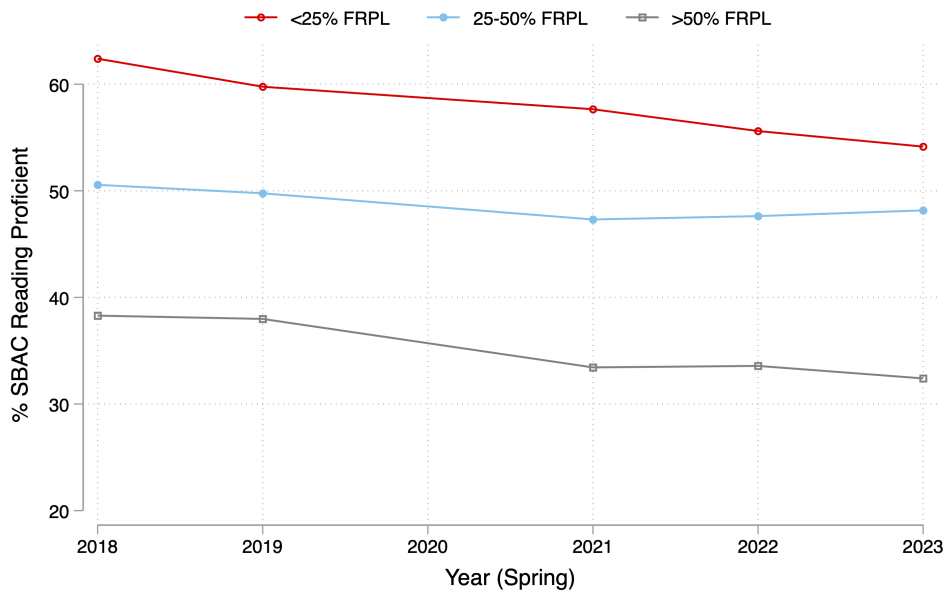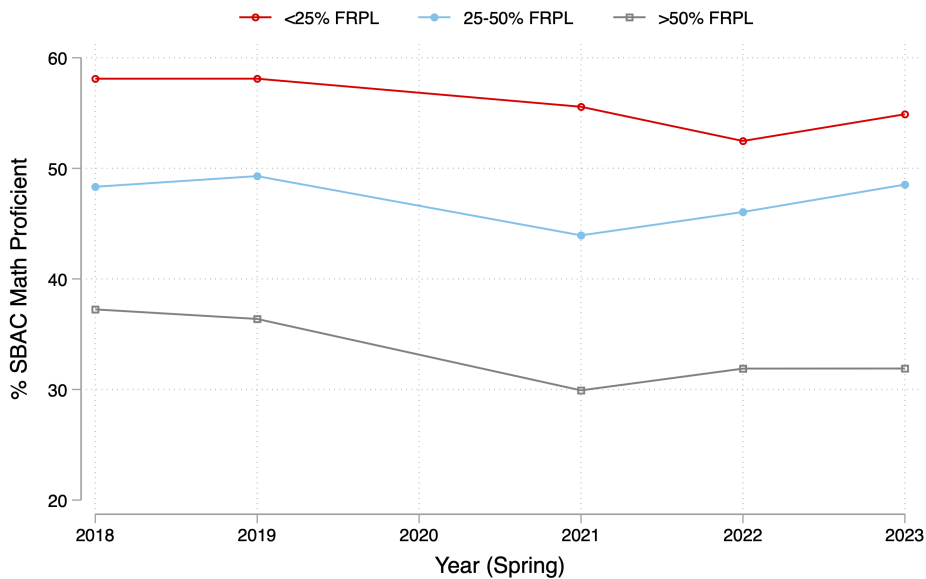
Panel B: Math

Source: Data come from GEMS academic records of all Montana public school students. Proficient students score at level 3 (proficient) or level 4 (advanced) on SBAC reading or math. Panel A includes reading outcomes; Panel B includes math outcomes. FRPL is the percentage of students receiving free or reduced-price lunch in 2019.
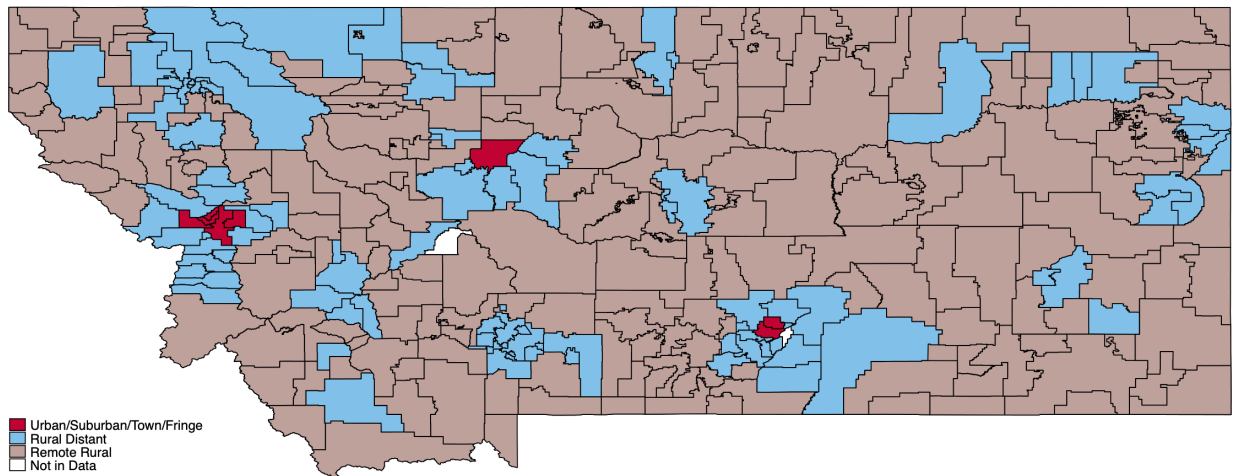
Figure B4: Trends in student math and reading proficiency by FRPL, Grades 7-8

Panel A: Reading

Panel B: Math

Source: Data come from GEMS academic records of all Montana public school students. Proficient students score at level 3 (proficient) or level 4 (advanced) on SBAC reading or math. Panel A includes reading outcomes; Panel B includes math outcomes. FRPL is the percentage of students receiving free or reduced-price lunch in 2019.

Appendix C: Impacts by rurality

School districts by rurality designation are mapped below in Figure A1 and based on a categorization of NCES classifications for the administrative offices of the LEA:

(1) urban/suburban/town/fringe: Territory inside an urbanized area and inside a principal city with population of at least 100,000 (urban). Territory outside a principal city and inside an urbanized area (suburban). Territory inside an urban cluster that is less than or equal to 10 miles from an urbanized area (town fringe). Census-defined rural territory that is less than or equal to 5 miles from an urbanized area, as well as rural territory that is less than or equal to 2.5 miles from an urban cluster (rural fringe)

(2) rural distant: Census-defined rural territory that is more than 5 miles but less than or equal to 25 miles from an urbanized area, as well as rural territory that is more than 2.5 miles but less than or equal to 10 miles from an urban cluster (rural distant)

(3) rural remote: Census-defined rural territory that is more than 25 miles from an urbanized area and is also more than 10 miles from an urban cluster (rural remote).

Figure C1: Mapping school districts by rurality

Legend:
- Urban/Suburban/Town/Fringe
- Rural Distant
- Remote Rural
- Not in Data

Source: District rurality is defined based on NCES definitions.

The fact that teachers in more remote areas were less likely to add more teachers during the pandemic also shows up in learning loss data (see Figure 7). The gap between proficiency rates in grades 3-4 between remote schools and schools closer to towns and cities grows between 2018-19 and 2022-23. In grades 7-8, the gap by school geography was already large pre-pandemic and did not grow. Instead, all three categories of school rurality saw dips in proficiency rates across both math and reading.

**Figure C2: Trends in absences by rurality**
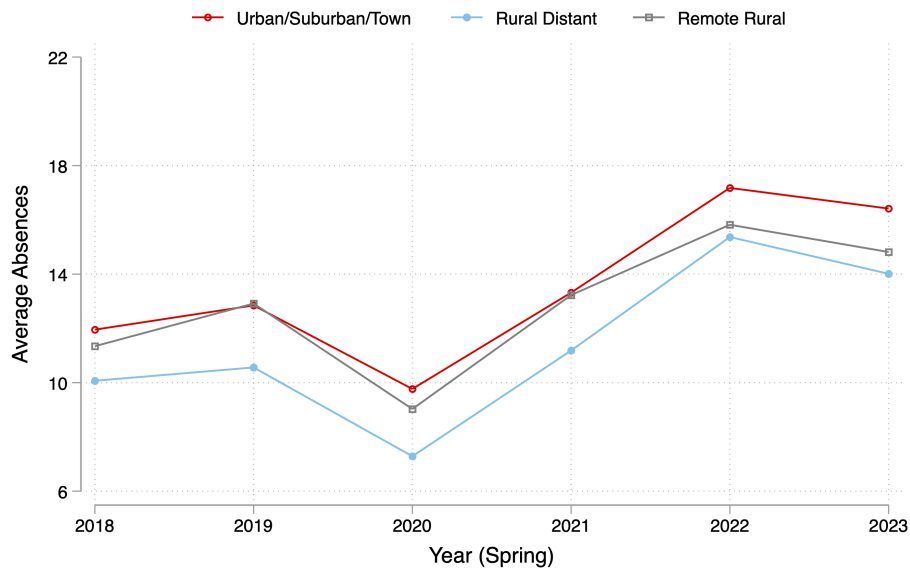
Source: Data come from GEMS academic records of all Montana public school students in grades 1-12. Absences equal days enrolled minus days present. These are top coded so the most days present can be 180. District rurality is defined based on NCES definitions; the map in Figure A1 depicts this classification.

Figure C3: Trends in student math and reading proficiency by rurality, grades 3-4
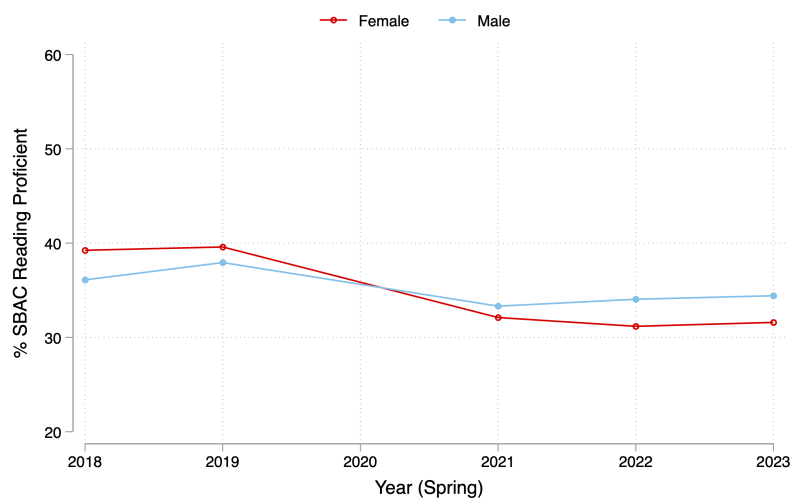
Panel A: Reading
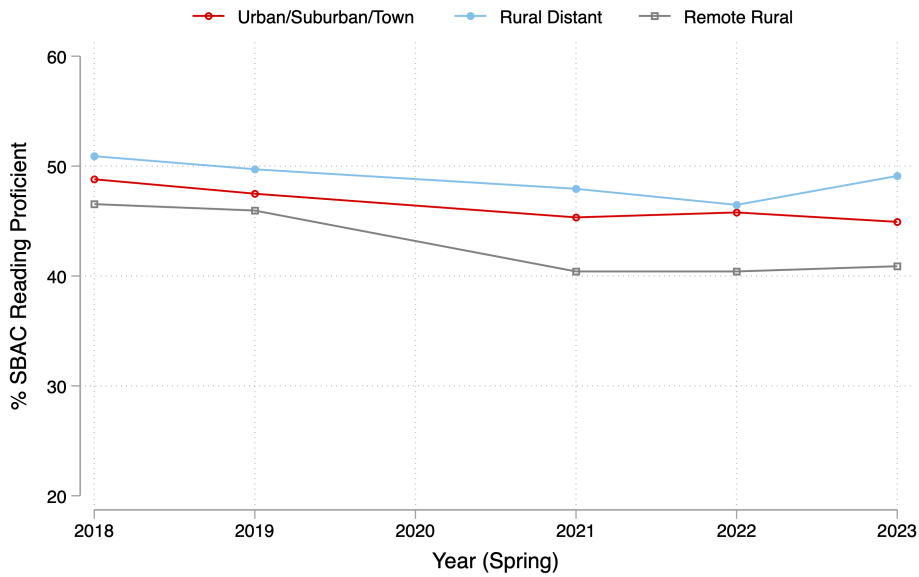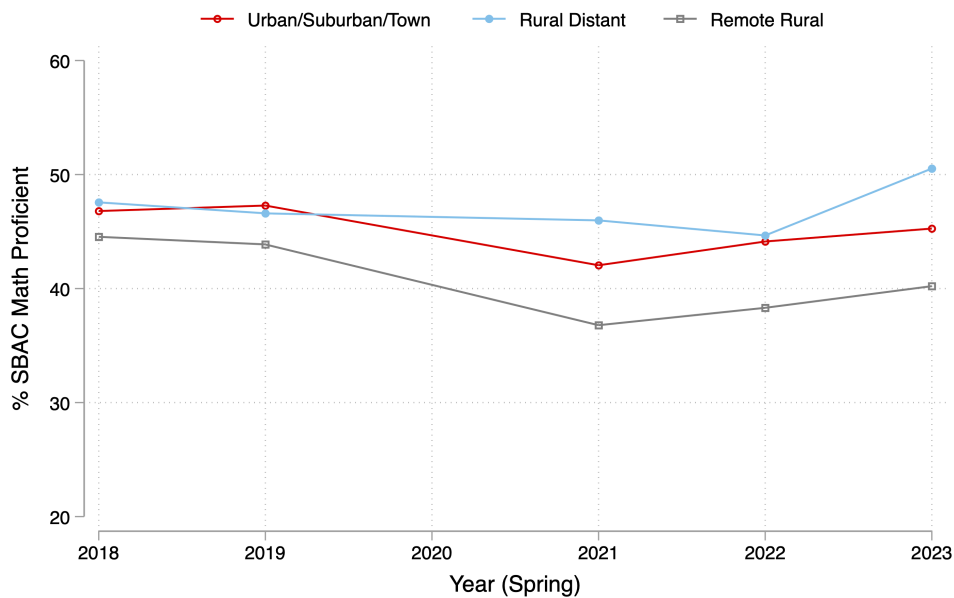
Panel B: Math

Source: Data come from GEMS academic records of all Montana public school students. Proficient students score at level 3 (proficient) or level 4 (advanced) on SBAC reading or math. Panel A includes reading outcomes; Panel B includes math outcomes. District rurality is defined based on NCES definitions; the map in Figure A1 depicts this classification.

Figure C4: Trends in student math and reading proficiency by rurality, grades 7-8

Panel A: Reading
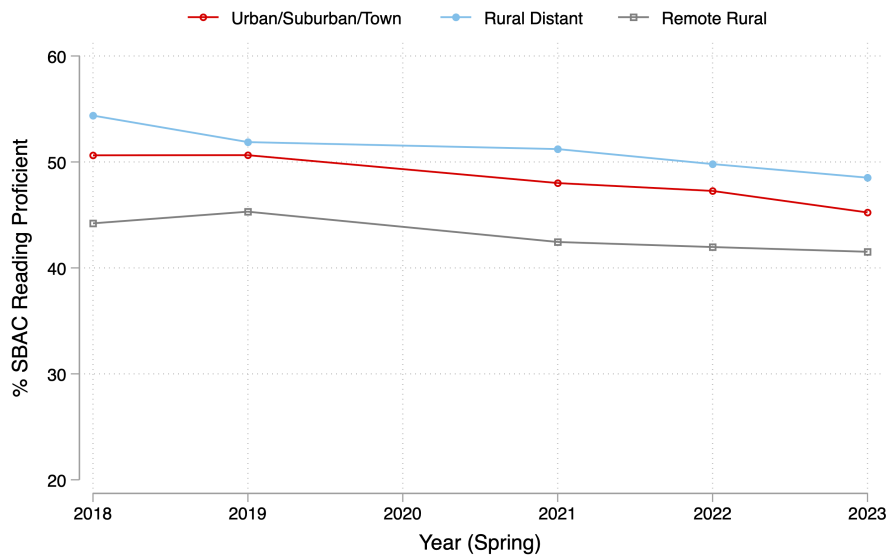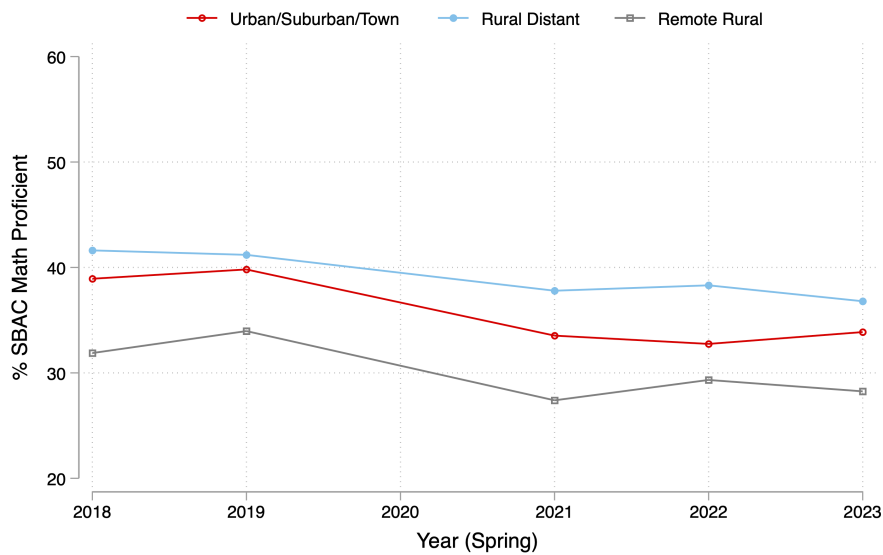
Panel B: Math

Source: Data come from GEMS academic records of all Montana public school students. Proficient students score at level 3 (proficient) or level 4 (advanced) on SBAC reading or math. Panel A includes reading outcomes; Panel B includes math outcomes. District rurality is defined based on NCES definitions; the map in Figure C1 depicts this classification.

Appendix D: Impacts by gender

The following graphs document the gender differences in proficiency percentages for third- and fourth-grade and seventh- and eighth-grade reading and math. Specifically, we find that seventh- and eighth-grade female students were 9 percentage points less likely to be proficient in reading compared to the 2018-19 AY, whereas male students saw little to no change in reading proficiency after the start of the pandemic. Further, female students were more likely to be proficient in math than male students in seventh and eighth grade before the start of the pandemic, and this trend flipped after the pandemic. Again, female students had lower proficiency levels that have not rebounded, whereas the decline in math proficiency for male students was smaller and not sustained. The differences are not as large in grades 3 and 4. OPI should continue to track these data and consider how schools can help female students who may continue to struggle in the post-pandemic learning environment.

Figure D1: Trends in student math and reading proficiency by gender, grades 3-4
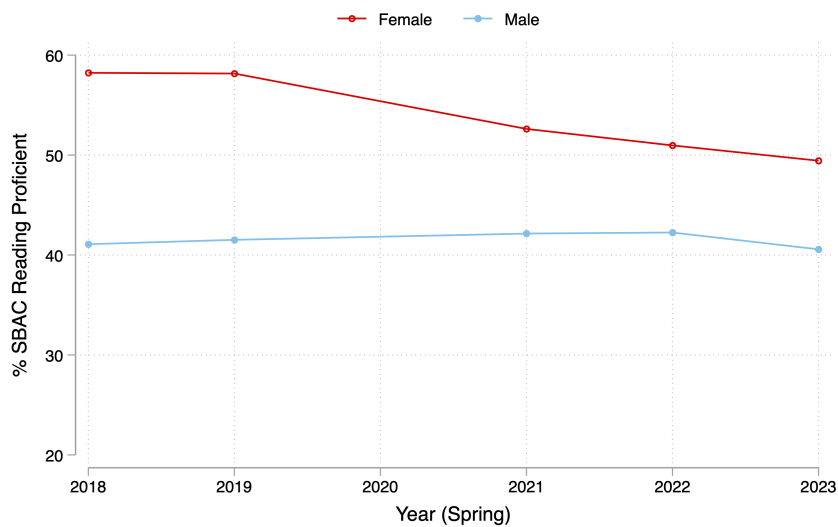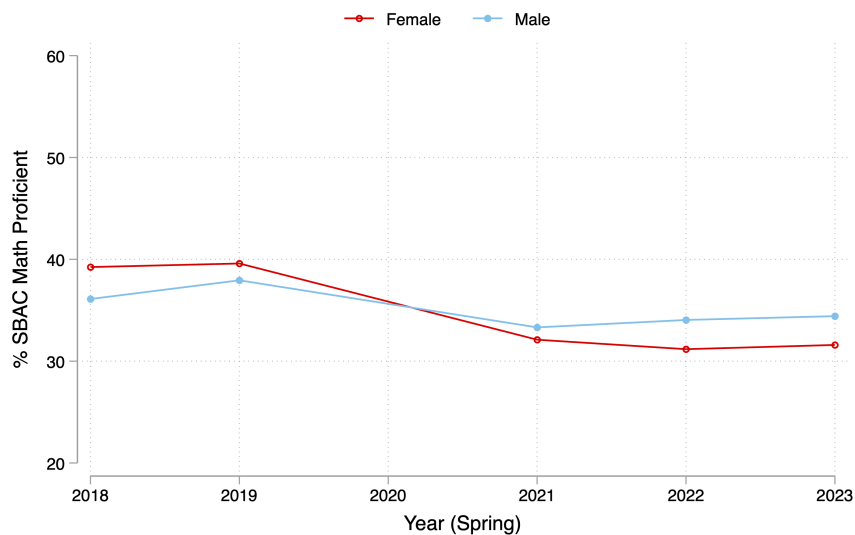
Panel A: Reading
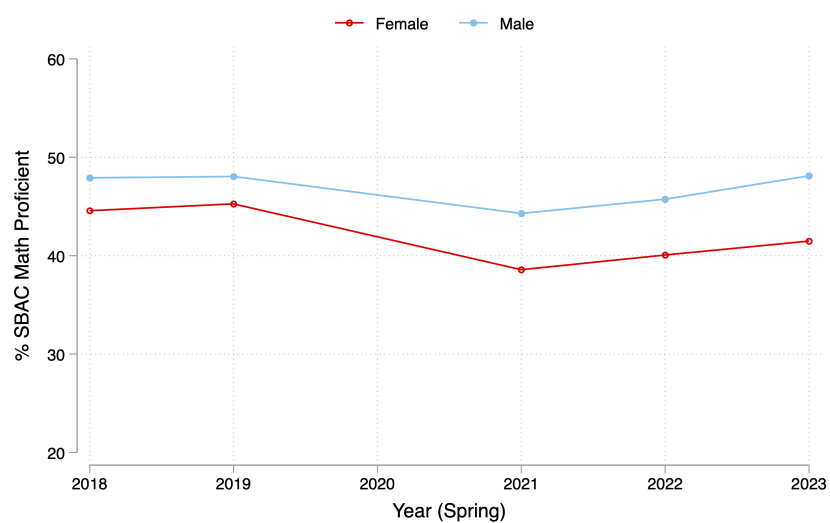
Panel B: Math

Source: Data come from GEMS academic records of all Montana public school students. Proficient students score at level 3 (proficient) or level 4 (advanced) on SBAC reading or math. Panel A includes reading outcomes; Panel B includes math outcomes.

Figure D2: Trends in student math and reading proficiency by gender, grades 7-8

Panel A: Reading

Panel B: Math

Source: Data come from GEMS academic records of all Montana public school students. Proficient students score at level 3 (proficient) or level 4 (advanced) on SBAC reading or math. Panel A includes reading outcomes; Panel B includes math outcomes.

Appendix E: Impacts on special education students

Gaps in absences look similar across the pandemic for special education and non-special education students. Dropout rates for special education students are also relatively low and have fallen or remained flat since the start of the pandemic. We do not look at tests for this sample, as special education students are sometimes exempted from standardized tests in a way that may vary pre- and post-pandemic.

Figure E1: Trends in absences by special education status
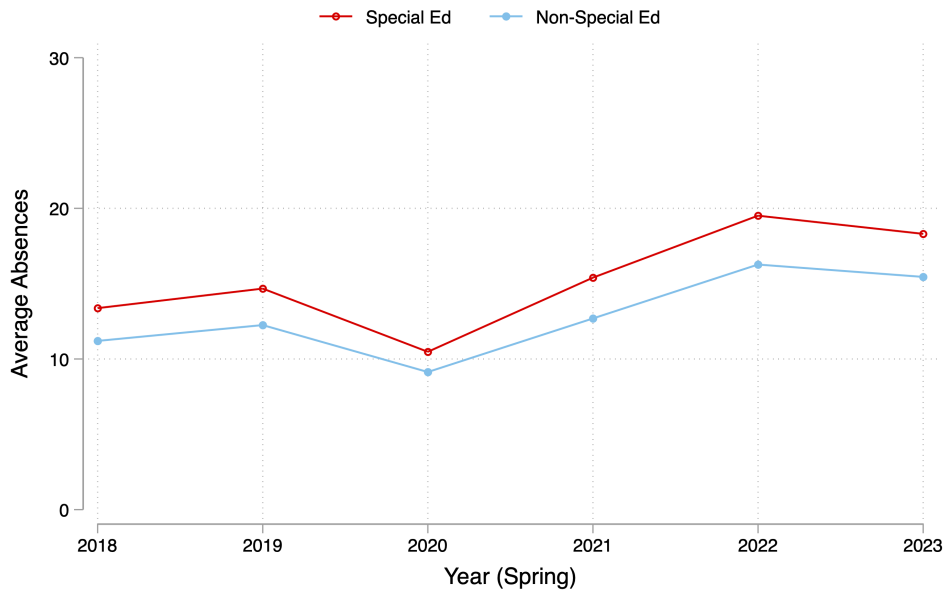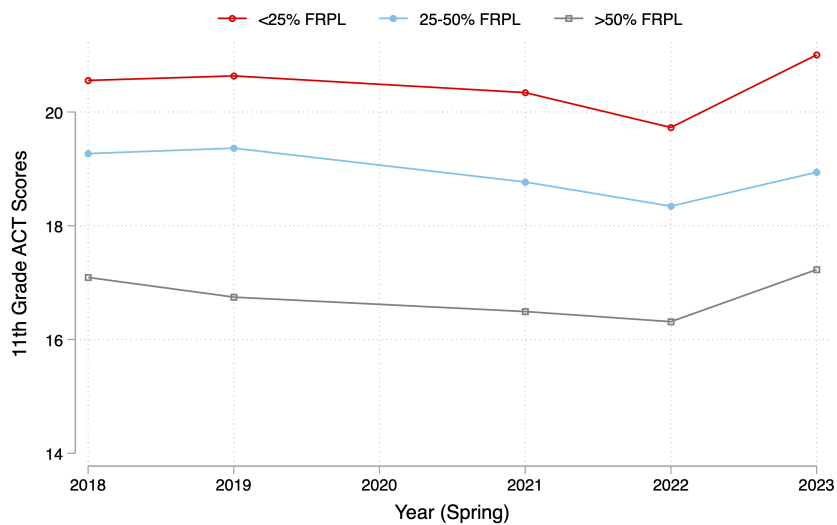

Source: Data come from GEMS academic records of all Montana public school students in grades 1-12. Absences equal days enrolled minus days present. These are top coded so the most days present can be 180.

Appendix F: High School Academic Outcomes

ACT scores rebound for the average student. They also rebound for each subset we study: by school poverty, by rurality, by gender, and by race/ethnicity.

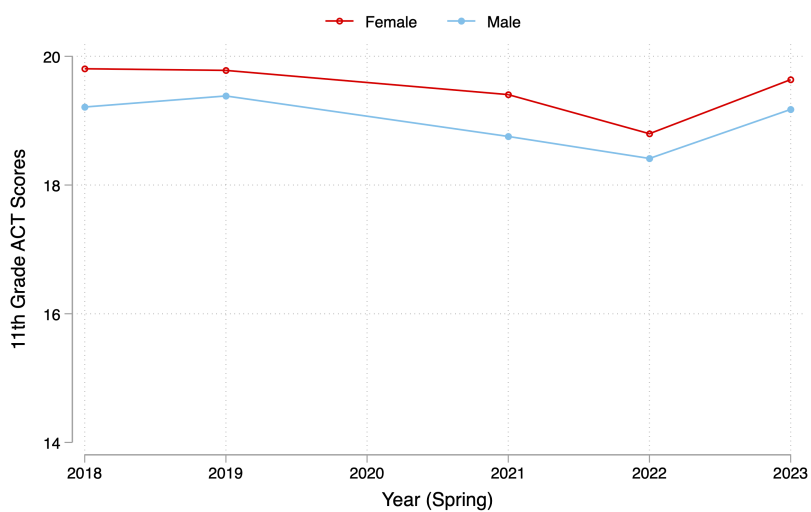**Figure F1: Trends in ACT scores by FRPL**

Source: Data come from GEMS academic records of all Montana public school students. FRPL is the percentage of students in the school receiving free and reduced-price lunch in 2019.

**Figure F2: Trends in ACT scores by rurality**
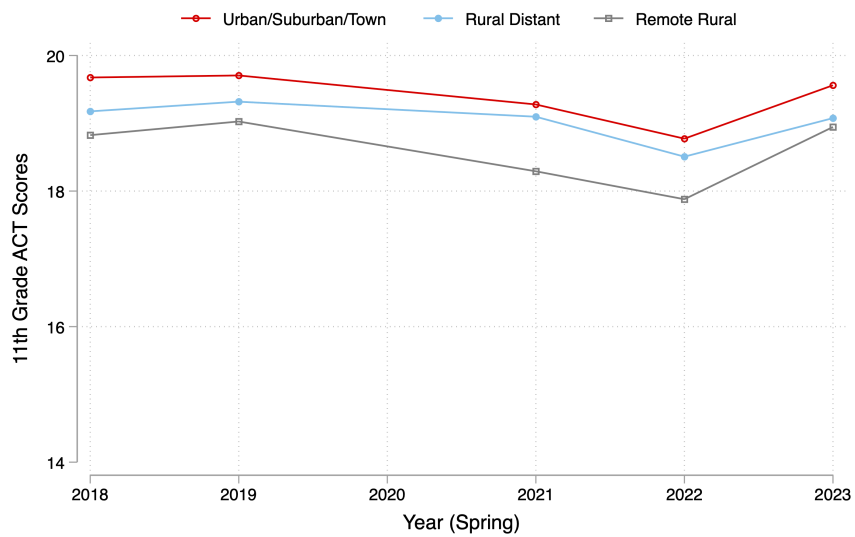
Source: Data come from GEMS academic records of all Montana public school students. Rurality definitions are in Figure C1.

Figure F3: Trends in ACT scores by gender

Source: Data come from GEMS academic records of all Montana public school students.

Figure F4: Trends in ACT scores by White and American Indian/Alaska Native students
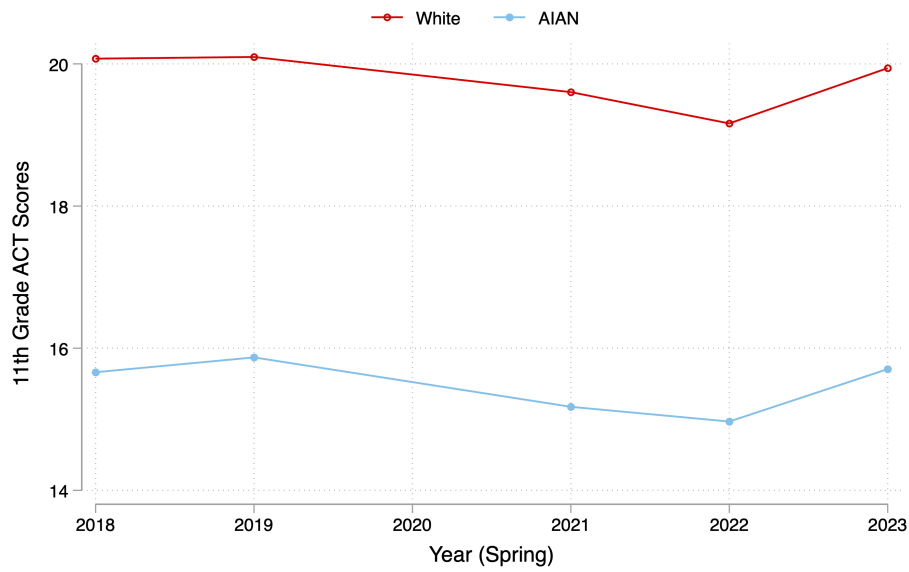
Source: Data come from GEMS academic records of all Montana public school students.

Appendix G: Data appendix

This report relies upon data from six major sources. We detail these below.

G1 Common Core of Data

School and district characteristics come from the Common Core of Data, which include enrollment counts, enrollment by race and ethnicity, staffing counts, the location of district administrative headquarters, and the Census-designated level of urbanicity and rurality of that location. The data also include the number of students eligible for free and reduced-price lunch status (FRPL). We use the FPRL from 2019 as an indicator of the number of economically disadvantaged students because all public school students were eligible for free breakfast and lunches during the pandemic, regardless of family income. These data can be downloaded publicly from https://nces.ed.gov/ccd/files.asp

G2 Terms of Employment (TOE) data

Staffing information comes from two sources. First, the number of teachers, nurses, paraprofessionals, and mental health staff comes from the Terms of Employment (TOE) data component of the Terms of Employment, Accreditation, and Master Schedule (TEAMS) collection. The TOE data contain individual staff position codes and percent FTE, which we use to aggregate into the totals for schools and districts. However, these data do not contain start and end dates of employment, making it difficult to track FTE counts when there is mid-year staff turnover. To ensure we have consistent FTE counts over time, we also cross-check this data with the staffing numbers reported in the Common Core of Data as these are point-in-time counts.

G3 Annual Survey of School System Finances (F-33)

District and state revenues and expenditures for education come from the Annual Survey of School System Finances (F-33). These data provide annual reports of the revenues from state, local, and federal sources, and expenditures by various categories (e.g., instruction, capital, salaries, etc.). These data are available through the 2020-21 AY for districts and through the 2021-22 AY for the state. The ESSER funds and how they were spent are also included in this data collection. These data can be downloaded publicly from https://nces.ed.gov/ccd/files.asp

G4 ESSER Reports from OPI

OPI collects the district reports of ESSER allocations and expenditures, classified by districts using federal reporting. The data for the ESSER I and II waves has been verified. ESSER III funds have been partially spent but will be fully expended until September 2024. ESSER III spending as of the date of this report had not been finalized by OPI, and the expenditures reported by category for ESSER III had numerous errors and inconsistencies (e.g., spending amounts that were times larger than the dollars awarded or subcategories that did not add up to the overall category totals). The data analysis in this report is based on the verified totals for ESSER I and II. District ESSER reports can be found https://opi.mt.gov/COVID-19-Information/ESSER.

G5 GEMS Data

Our student-level data come from the GEMS system, where we have de-identified data for all K-12 students in Montana public schools from 2017-18 AY through the 2022-23 AY. Proficiency in SBAC (Standardized Balanced Assessment Consortium) math and reading scores are based on reaching levels 3 and 4 on those tests. All eleventh-grade students take the ACT in Montana. Neither of these tests were universally administered in the 2019-20 AY due to the pandemic. More information on the SBAC tests and ACTs can be found here: https://opi.mt.gov/Leadership/Assessment-Accountability/MontCAS/Required-Assessments#828888824-general-and-alternates-tests-in-science-grades-5-8-and-11. In addition to test scores and attendance, these data also include individual-level race/ethnicity identifiers, special education status, gender, and school attended. We use only the AIAN and White categories for student race/ethnicity as the others have smaller samples and make it harder to do inference.

G6 ESSER E-Grants Data

We access publicly available data from E-Grants. They detail the specific ways in which schools spent ESSER funding, beyond categorizing the funding into buckets. We read through these data for the 2021-2023 fiscal years to better gauge the ways schools needed to spend the funds. While nearly all schools spent money on cleaning supplies, specific COVID-19-related cleaning protocols, and additional health-related items (e.g., thermometers), we do not discuss those in the report as they are unlikely to have lasting impacts on student academics and school budgets. These data can be found here: https://egrants.opi.mt.gov/opigmsweb/StaticPages/Menulist.aspx.