Time for School

Assessing the inequality of access to instructional time across the United States

For decades, policymakers have argued that the American education system fails to provide the necessary instructional time for students to remain competitive in an increasingly globalized economy. In 1983, *A Nation at Risk* warned that "mediocre educational performance," due in part to the comparatively fewer hours U.S. students spend in school, threatened the very safety and economic security of the country. A decade later, the National Education Commission on Time and Learning declared "Time is learning's warden. Our timebound mentality has fooled us all into believing that schools can educate all of the people all of the time in a school year of 180 six-hour days." In 2009, President Obama echoed these sentiments, arguing that the American school calendar "puts us at a competitive disadvantage" and that "the challenges of a new century demand more time in the classroom."

Nonetheless, the traditional school schedule remained largely static over the last few decades. In recent years, to address learning loss after the Covid-19 pandemic, state leaders have advocated for increased time in school. Several districts around the country, including in Texas and Virginia, experimented with extending school-year calendars to more than 200 days. In 2023, New Mexico lawmakers increased mandatory school hours to 1,140 each year—an increase of 15 percent for elementary schools—and Alabama lawmakers introduced a bill to add 30 days to the school year.

At the same time, however, a growing number of districts have shifted schedules in the opposite direction to address post-pandemic staffing shortages. About 900 districts nationwide, including more than half of all districts in Colorado, now follow four-day schedules, up from 650 in 2020.

What are the potential impacts of these changes to time in school, and what decisions can we make to maximize benefits and minimize harm? We conduct a comprehensive review of the relevant research and an analysis of newly compiled data that compares American students' time in school to their peers across the country and around the world. In addition, we conduct a case study to identify schedule-based disruptors of instructional time and suggest how schools can make the most of the time they have.

When it comes to time in school, both quantity and quality matter. Looking across 74 studies with causal research designs, we see a compelling body of evidence that increasing total school time leads to gains in academic achievement, on average. The most substantial impacts are at schools where longer days or years are part of wholesale reforms to maximize student engagement and instructional quality, such as turnaround or charter schools. Research also consistently shows that student achievement declines when districts reduce time in school by adopting four-day school weeks.

We also look at how long U.S. students spend in school, on average, nationwide. Despite claims of being left far behind, the U.S. ranks 8th compared to other high-income countries, with a relatively longer school day but shorter school year. Our analysis finds the typical K–12 public school is in session for 1,231 hours each year, based on the familiar averages of about 7 hours and 179 days per school year. However, we find broad differences from state to state—an underappreciated dimension of education inequality. Students in states with the longest schedules spend 133 hours more in school each year, on average, compared to those with the shortest schedules, which is equivalent to 1.4 additional years of school over the course of a K–12 education.

Reviewing the Research About Time in School

We start with a wide-ranging search for studies that examine time during the traditional K–12 school day. Our review includes studies that reasonably support causal inferences about the effects of time, excluding those that focus on afterschool or summer programs. In terms of outcomes, we focus on academic achievement as measured by test scores. This is a relatively blunt approach on two fronts: not all time in school is active learning time, and time in school can influence a range of student outcomes, such as social-emotional skills and contact with the juvenile justice system. However, total time in

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school is the most malleable for policymakers, and test scores serve as a common and useful summary metric of students' academic progress.

In all, we include 74 papers in our review. We grouped the studies and their findings into five categories, discussed separately below.

Increased Time Bundled With Other Reforms

The biggest impacts from longer school days and years are at schools that extend time as part of a larger education reform effort, such as urban charter schools in Massachusetts and those operated by KIPP. Researchers find annual effects of attending these schools in middle school as large as 42 percent of a standard deviation in math and 25 percent in reading. However, these schools also feature tutoring, data-driven instruction, and frequent teacher observations, among other distinguishing features. Several studies attempt to disentangle the component parts and find, to varying degrees, that additional total time predicts larger effects on achievement.

We also find evidence of traditional school districts implementing similar bundled interventions and seeing positive results. In Houston, math achievement increased by 15 percent to 18 percent of a standard deviation at 20 elementary and secondary schools that adopted such reforms, including extending the school day and year to increase instructional time by 21 percent and incorporating high-dosage tutoring throughout the extended school day. In Lawrence, Massachusetts, the state took over the traditional public school district and added 200 hours to the school year for students in grades 1–8, while also increasing school spending, replacing underperforming staff, and adding extra time for underperforming students. Researchers find these reforms increased math achievement by 30 percent of a standard deviation and reading achievement by 10 percent of a standard deviation.

Extending the School Year

Research on the effect of additional school days often seeks to take advantage of unexpected changes in the number of days students are in school before taking standardized tests. These studies tend to show a small positive increase in academic achievement from the addition of 10 or more days before a test. Correspondingly, research finds decreases in the overall academic performance of students who experience an unscheduled loss of total time from snow days, strikes, or other events. Studies looking at optional extended school-year programs also provide some evidence of increases in student achievement, such as from a weeklong math program in Massachusetts, but not all students participate in voluntary programs.

Extending the School Day

Full-day kindergarten offers the best example of a widescale expansion in the length of the school day in the United States, and several studies find almost uniformly positive effects on student learning. For example, in Indiana, students who were randomly assigned to full-day kindergarten outperformed their peers assigned to half-day programs by 31 percent of a standard deviation on an end-of-year assessment of literacy skills. However, studies that examine longer-run outcomes find that these positive effects tend to fade out over time.

Studies of schools in the U.S. that adopted extended days for other grades find mixed results. A Massachusetts study found no impact in math, reading, or science after 26 schools added at least 300 instructional hours to the school year. A Florida study found reading scores increased by 5 percent of a standard deviation in a single year after a state policy required the 100 lowest-performing elementary schools to extend the school day by one hour, dedicated to additional literacy instruction.

Studies looking at extending instructional time for specific subjects without lengthening the school day find positive effects on performance in the targeted domain. For example, when Chicago Public Schools required low-performing 9th graders to take two periods of math instead of one, student made gains in math achievement and were more likely to graduate high school and enroll in college years later (see "A Double Dose of Algebra," *research,* Winter 2013).

Four-Day School Weeks

In addition to lengthening the school day or school year, districts can also change the way that they structure their existing time, through adjusting academic calendars, class schedules, and the number of school days each week. We find scant causal evidence regarding block schedules and year-round school calendars (see "Busting the Myths About Year-Round School Calendars," *feature,* Spring 2023). However, in looking at four-day weeks, research shows that they rarely improve academic outcomes and often lead to decreases in performance (see "The Shrinking School Week," *research,* Summer 2021).

Four-day weeks have grown in popularity since the pandemic—teachers like the flexibility these schedules offer, and districts look to their potential to cut HVAC and busing costs. When four-day weeks maintain the same total time in a school year by lengthening the day but reducing the number of days, research shows mixed effects. In Colorado, after small rural districts switched to a four-day week, more elementary students scored proficient on math and reading tests. In Oklahoma, switching to a four-day week was a cost saver and decreased fights and bullying, without negative effects on student achievement.

However, research consistently shows that student achievement suffers when districts shift to a four-day week and reduce the total number of hours in school—the more common scenario. The average student in a four-day school experiences 85 fewer total instructional hours per school year than their counterparts at five-day schools, and research shows a corresponding decrease in math and reading scores. A recent study of student performance across six states on the Measures

of Academic Performance (MAP) assessment found student scores dropped by 3 percent of a standard deviation in math and 7 percent of a standard deviation in reading, on average, with larger effects at non-rural schools.

Adjusting School Start Times

While not strictly focused on duration, many states and communities are looking to shift school start times to ensure students are well rested and ready to learn during school hours. Governors in California and Florida have signed new laws mandating later start times, and legislators in 13 other states have introduced bills for consideration.

Later school start times for adolescent students are recommended by the American Academy of Pediatrics and have been shown to improve sleep, mood, and attention while decreasing car accidents. The research shows small to moderate positive effects on state standardized tests when schools delay start times, typically to no earlier than 8:30 a.m. (see "Rise and Shine," *research,* Summer 2019). A North Carolina study found that a one-hour delay in middle school start times caused a small increase in math and reading achievement. Studies of a later high school start time in Minnesota show no effects on ACT scores but a positive effect on grades.

We see a compelling body of evidence that increasing total school time leads to gains in academic achievement, on average. The most substantial impacts are at schools where longer days or years are part of wholesale reforms.

How Much Time Do U.S. Students Spend in School?

Based on middle school data collected by the OECD, the U.S. ranks 8th among three dozen member countries and partners in terms of time students spend in school (see Figure 1). On average, U.S. middle school students spend 1,022 hours in school each year, with a relatively long school day and short school year. A different data collection focused on high school, conducted as part of the 2018 PISA tests, shows the U.S. ranks 8th among 79 participating countries and economies.

Unlike most countries, however, the U.S. system of government allows for wide variety among states, which set their own school-time mandates. Just 16 states mandate both the minimum length of the school year and the amount of total hours, while 10 states give districts the freedom to meet either a minimum number of days or total hours requirement. Eleven states require only a minimum number of days, and 13 states only set a minimum requirement for the number of total hours, according to 2023 data from the Education Commission of the States.

This patchwork system results in markedly different minimum school time requirements for U.S. students depending on where they live. Among the 37 states that identify a minimum number of days per year, 28 set the minimum at 180 days—but Colorado requires 160 days while Kansas mandates 186 days in school. Some 39 states specify a minimum number of hours per year, with similarly wide variation. For example, high school students in Arizona must have at least 720 hours of school each year, while high schools in Texas must have at least 1,260 hours a year. In Alaska, Florida, and Connecticut, high school students are only required to have 900 hours of school per year compared to 1,170 hours in Maryland—a difference of 30 percent, or about 40 more days of school each year, or 160 additional days over all four years of high school.

Beyond required minimums, individual school districts set their own calendars, leading to even more variety within states. We look at 2017–18 data from the National Teacher and Principal Survey, a nationally representative survey of traditional and charter public schools. We estimate the typical K–12 public school in the U.S. is in session for 6.9 hours per day and 178.6 days per school year, on average, for a total of 1,231 hours. On average, high schools have the longest days, at 7.03 hours, compared to 6.80 hours in elementary and 6.97 hours in middle school, nationwide. We then estimate the median time in school across K–12 for each state, which ranges from 1,131 per year in Hawaii to 1,313 hours per year in Texas (see Figure 2).

We also compare time in school for students living in the top- and bottom-ranked five states based on median hours of school per year. The five top-ranked states with the most time in school are Texas, Nebraska, Arkansas, Mississippi, and Alabama. Students in those states are in session at least 133 hours more, at the median, than students in the five states where schools are open the fewest hours: Hawaii, Nevada, Maine, Oregon, and Rhode Island. Over the course of a K–12 education, the difference for these groups of students is 1.4 more or fewer years of schooling.

In terms of school type, charter schools are in session for 65 more hours each year than traditional public schools, on average—1,291 hours compared to 1,226. Suburban schools have the shortest sessions at 1,212 hours per year, on average, compared to roughly 1,240 hours per year at schools in cities, towns, and rural areas.

We then sort schools based on the length of their schedules and compare student characteristics by quintile. Black students and students who qualify for free and reduced-price school lunch disproportionately attend schools in the top quintile, which have

the most total hours. Black students account for about 15 percent of all U.S. students, but 21 percent of students at schools in the top quintile. Students eligible for free- or reduced-price lunch comprise 68 percent of the student body at schools in the top quintile, but only 58 percent in bottom quintile schools.

Examining Barriers to Instructional Time

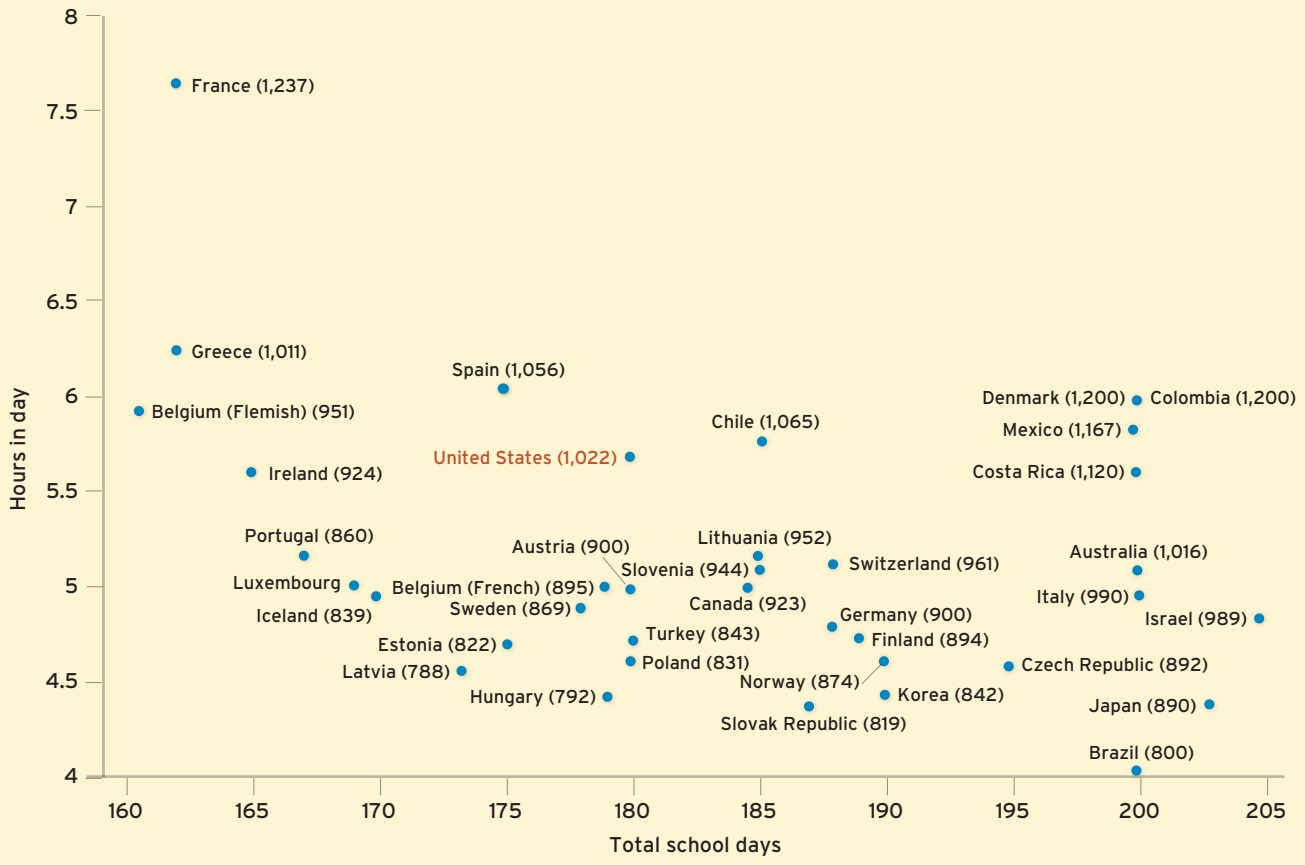
Time spent in school is not always spent in classrooms, and time spent in classrooms is not always spent actively learning. A large body of research documents the cost of organizational interruptions, off-task behavior, and mundane activities like passing periods.

In addition, absenteeism among teachers and students—an urgent and stubborn problem in the post-pandemic years—can dramatically cut into instructional time and slow learning. One in four U.S. students was considered chronically absent in the 2022–23 school year, and nearly three-quarters of public schools reported higher rates of teacher absenteeism following the pandemic. This spring, the Biden Administration encouraged states to spend federal Covid-relief funds on evidence-based strategies to decrease chronic absenteeism, such as home visits, as well as on high-dosage tutoring and extended learning time, such as afterschool or summer school programs.

To get a detailed understanding of how these interruptions affect teaching and learning, we examine the Providence Public School District, which was a pre-pandemic outlier in terms of student absenteeism and interruptions due to student behavior. In 2015–16, 45 percent of Providence high school students missed more than 18 days of school, the equivalent of 10 percent of the school year. This compares to 26 percent of Rhode

U.S. Ranks 8th in School Time Among High-Income Nations *(Figure 1)*

Despite longstanding concerns that American students are in school far less than their peers worldwide, the United States ranks 8th in terms of average time in school at 1,022 hours per year, according to middle school data collected by the OECD. Among 37 nations and economies, students in France are in school the longest at 1,237 hours, while students in Latvia have the least time in school at 788 hours



SOURCE: Organization for Economic Cooperation and Development, 2021

Island students and less than 14 percent of students nationwide. Providence also suspended students at relatively high rates, issuing 21 in-school or out-of-school suspensions per every 100 students in the district, compared to 17 statewide.

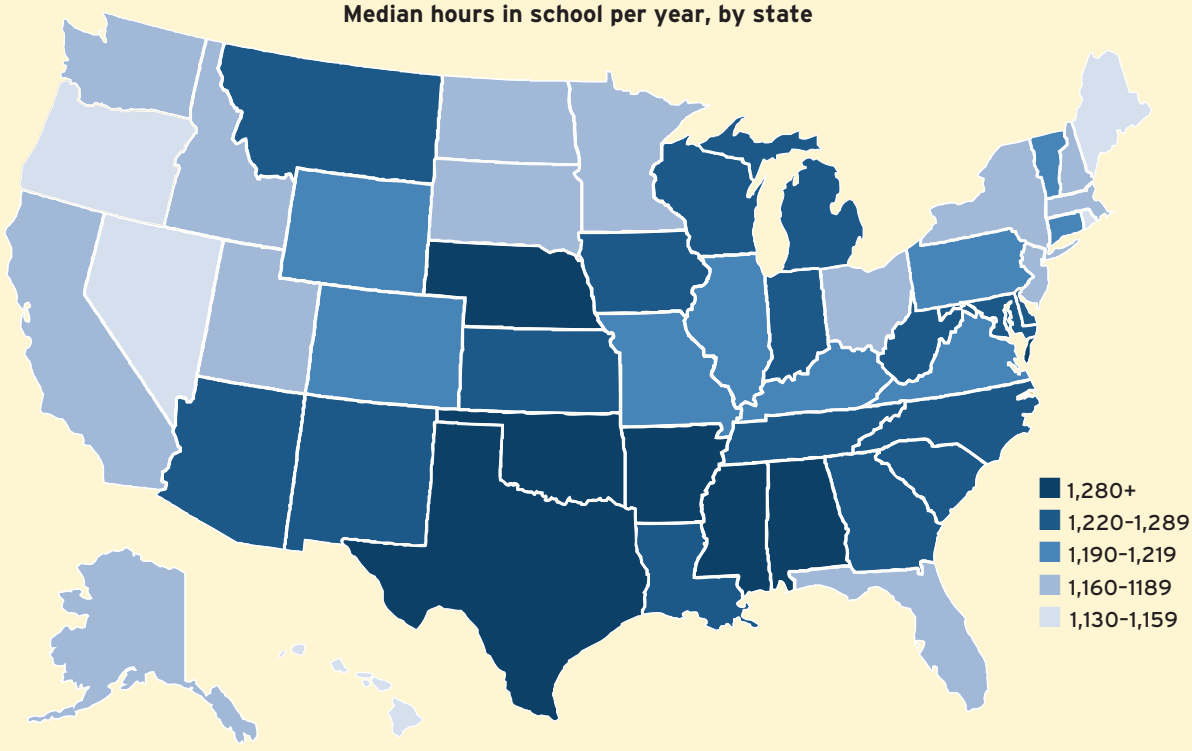
Our analysis looks at 2016–17 data to calculate the instructional hours that remain after accounting for student absences, suspensions, and tardies, as well as teacher absences and outside interruptions like intercom announcements. We include teacher absences because, although it is possible that students do learn from substitute teachers, our classroom observations suggest that substitutes are rarely successful at delivering sustained instruction, and requests for substitutes frequently go unfulfilled.

High schools in Providence are in session for 6.75 hours each day, 5.76 hours of which is instructional time. However, the average student loses 25 percent of instructional time to these many interruptions. Assuming that any additional time in school would be similarly interrupted, students would have to attend school for 8.6 hours every day to achieve the intended amount of instructional time. We find similar, but smaller, trends in district middle schools, where students lose 21 percent of instructional time, and in elementary schools, where 16 percent of instructional time is lost.

Three factors account for the majority of lost instructional time: unexcused student absences, outside interruptions like intercom announcements, and teacher absences. Both outside interruptions and the impact of teacher absences are arguably under the direct control of school districts, which could minimize intercom interruptions, incentivize teacher attendance,

Time in School Varies Widely from State to State *(Figure 2)*

The typical U.S. student spends 1,231 hours in school each year, based on K–12 data—but that varies from state to state. In states like Texas and Nebraska, with median school durations of more than 1,300 hours per year, students will have access to the equivalent of at least 1.4 more years of schooling over the course of a K–12 education compared to students in states like Hawaii, Nevada, and Maine, where students are in school for less than 1,150 hours each year.



NOTE: Excludes alternative schools, schools with special education emphasis, special education schools, and career/technical/vocational schools.

SOURCE: Authors' calculations, based on data from the National Teacher and Principal Survey, 2017–18

and build deeper pools of substitute teachers. Together, interruptions and teacher absences cost the average Providence high school student 97.3 hours of instructional time each year.

Equalize Access and Maximize Instructional Time

While the U.S. education system provides a comparable amount of instructional time, on average, to most other high-income countries, many students are being left behind. More than 19 percent of public schools are in session at least one full week less than the national median of 180 days, and 14 percent have school days that are at least a half-hour shorter than the national median of 6.9 hours. These differences in school time add up to stunning inequities across a K–12 education simply because of where a student lives.

Students in states with the longest schedules spend 133 hours more in school each year compared to those with the shortest schedules, on average, which is equivalent to 1.4 additional years of school over the course of a K–12 education.

Raising minimum school time requirements across states to be closer to the national average is one potential policy response to the Covid-19 pandemic. Given that research suggests time in school has diminishing marginal returns, focusing on those schools that offer the least amount of time might also produce the largest returns. As a thought experiment, imagine if the five states where schools are open the fewest hours raised minimum time requirements to seven hours a day and 180 days a year. Students at the 94 percent of schools in Hawaii, Nevada, Maine, Oregon, and Rhode Island that do not meet these minimums would gain an average of 125 hours of schooling per year. Over a K–12 education, these 368,000 students would gain 1,625 hours, or 1.3 years of school.

A parallel nationwide effort to adopt 7-hour, 180-day minimums would increase total time in 71 percent of U.S. public schools. The effect would be to add more than 4.6 million hours of additional time per year nationwide to the benefit of more than 32 million students.

However, increasing time in school is expensive and not always popular. Relatively few school districts have opted to extend their schedules in the post-pandemic era amidst teacher and parent hesitancy, even with students facing acute learning losses and districts having access to substantial federal recovery funds.

Teachers can be hesitant to agree to extended school days or years, even when they are compensated for their time. This may be particularly true for teachers attracted to the profession because it allows them to care for their own children after school and during the summer. District that expand time in school will have to take additional steps to attract and retain effective teachers given the rising rates of turnover and burnout in the wake of the pandemic.

Support for more time in school is also mixed among parents. Many districts have navigated this challenge by making extra time voluntary for families or by allowing individual schools to opt in. However, these approaches could widen disparities in student achievement if only the most motivated students or well-organized schools participate.

Our research synthesis and case study point to several lower-cost, complementary approaches to maximize, rather than simply extend, time in schools.

At a minimum, districts should fiercely avoid reducing time in school. There is a compelling body of evidence across multiple states documenting the negative effects of four-day school weeks that decrease total time. Districts also should adopt low-cost policies to convert more time in school into active learning time. One proven example is shifting school start times later for older students, given causal evidence showing achievement gains and health benefits.

In addition, our case study shows two ways that schools can recover substantial amounts of lost instructional time without changing their schedules. First, schools should stop interrupting class whenever possible. Instead of using an intercom, calling a classroom phone, or visiting in person to communicate with teachers, administrators should send emails or visit during passing periods. Second, schools should work to minimize student and teacher absences. Research points to a range of initiatives that can help to reduce chronic absenteeism among students and incentivize high teacher attendance. This approach to increasing instructional time is more complex than adopting top-down policies, but we expect it offers greater potential returns for more schools.

Time use is always about tradeoffs. Some families simply value the flexibility that shorter school days and years provide. Additional time in school might even be counterproductive if it crowds out enriching life experiences outside of school, or if schools can't convert added time into active learning. On its own, more time will not ameliorate the deep harms caused by the Covid-19 pandemic. But the clear inequities in access and urgency to support students' academic recovery suggest that targeted efforts to expand and maximize time in school would be a wise investment.

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