

School Bell Times and Student Outcomes

Research Brief
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Background

School start times have been consistent in Jefferson County for decades with middle/high school students beginning at 7:40 AM and ending at 2:20 PM and elementary school students beginning at 9:05 AM and ending at 3:45 PM. Jefferson County Public Schools (JCPS) is considering revising school start times in the upcoming school years because of two primary reasons. First, there is a [national shortage](#) of bus drivers. A recent national survey found that the majority of districts described their driver shortage as “severe” or “desperate.” In Jefferson County, our reduced bus driver pool has resulted in a need to consolidate routes, increase the number of students on buses, and increase the number of double and triple runs. Creating a staggered start time approach helps to create a more equitable system so buses can be more consistent in drop-off times, fewer students experience transportation disruptions, and bus drivers have more predictable and stable daily routes.

Secondly, because we are considering revising school start times, there is also an opportunity to 1) review the research on how start times can impact younger and older students differently and 2) review if and how JCPS can implement more research-based strategies to help improve student outcomes. The purpose of this brief is to review the most recent research and provide considerations for revising start times to help improve student outcomes.

Start Times and Student Outcomes

The relationship between sleep and outcomes across all ages is widely supported. The [National Institute of Health](#) has extensively outlined how sleep relates to mental health, physical health, and alertness. From a developmental perspective, there is extensive research arguing for the benefits of having later start times for adolescent age students. Biological changes coupled with changes in academic and lifestyle is associated with wide-scale sleep deprivation in middle and high school students. While it is recommended adolescents get 9 hours of sleep, the national average is closer to 7. Therefore, the [American Academy of Pediatrics](#) recommends start times for adolescents to be 8:30 AM or later because earlier start times are more likely to lead to sleep deficits. Despite the recommendation, the [CDC](#) reported in a 2014 study that over 90% of start times for high school students and over 80% of start times for middle school students start school before 8:30 am. Changes are happening, however, across the nation. In 2019, California became the first state to [mandate](#) later school times for adolescents with middle school students starting no earlier than 8:00am and high school students starting no earlier than 8:30 am.

Beyond the medical and public health research showing the benefits of sleep, there are research studies on school districts showing that changing start times has educational benefits. A few recent key findings from the literature are described below:

- **Improved attention:** Delaying start times relates to less daytime drowsiness and [increased attention](#) in adolescents. There are consistent findings that later start times leads to [fewer](#) adolescent vehicular incidents

- **Improved student outcomes:** By increasing the amount of sleep in adolescents through a change in the bell times, [Seattle](#) public schools found significant improvements in attendance and grades. A 3-year national [study](#) of high school students with varying start times found that shifting the start time to 8:30 or later resulted in 60% of students getting at least 8 hours of sleep and in turn, resulted in lower depression, improved attendance, improved grades, and improved academic achievement.
- **Considerations of group differences:** A recent [study](#) from researchers from the U.S. Bureau of Labor Statistics found that a later start time for high school students was associated with higher achievement when students actually utilized the later start time to sleep more. The study found that females were more likely to report more sleep after the change than males, which led to females having a significant increase in achievement. In other words, when shifting start times, it is important to consider how districts can also promote the shift to improved sleep patterns.

Considerations for Revising Start Times

As Jefferson County continues to consider options for addressing the bus driver shortage, we can continue to learn from other areas and districts that have implemented changes in their start times for elementary and secondary students. Based on a national review, several factors should be considered during the planning phase:

- **Expect Strong Family Reactions:** Other districts that have changed start times or proposed to change start times have experienced strong family reactions to change. This is to be expected. Current routines are in place and changes in school schedules affect everyone's daily routines. For some families, changes will be beneficial and for some families, it will present challenges. Having time to collect input, make adjustments, communicate to families consistently, and provide time for families to adjust to changes is critical. Otherwise, many districts do not follow through in their implementation (see [Boston](#)).
- **Address Challenges with Mitigation Strategies:** Once start times options are proposed, it is critical to conduct a risk analysis on what the challenges will be from the different proposals and what can be implemented to address those challenges. For example, districts may need to partner or create affordable after-school care options for elementary students who would be released earlier in the day. Sporting activities that are impacted will need lighting systems across schools to remain operable later in the evening. Younger students may need to have shorter walks to bus stops or have reflective materials added to their backpacks to address changes in darkness. In addition, some districts have strengthened partnerships with city leaders to ensure streetlights and sidewalks are safe for all students in navigating their walk home.
- **Consider Gradual Implementation:** In some districts, like St. Paul, Minnesota, a more gradual change to start times led to a more successful district-wide roll-out. Testing the change in a small group of students or schools to examine whether attendance and academics did improve was important in their decision to expand their later start time for older students.
- **Sleep Campaigns:** Changing start times for students does not necessarily lead to changes in sleep patterns. Sleep education and parent engagement in promoting enough sleep for students is essential. Factors such as inconsistent sleep patterns, excessive use of devices, and too many activities can also lead to sleep deprivation. Changing start times can help promote healthier sleep choices but will not guarantee them without additional family and student support.