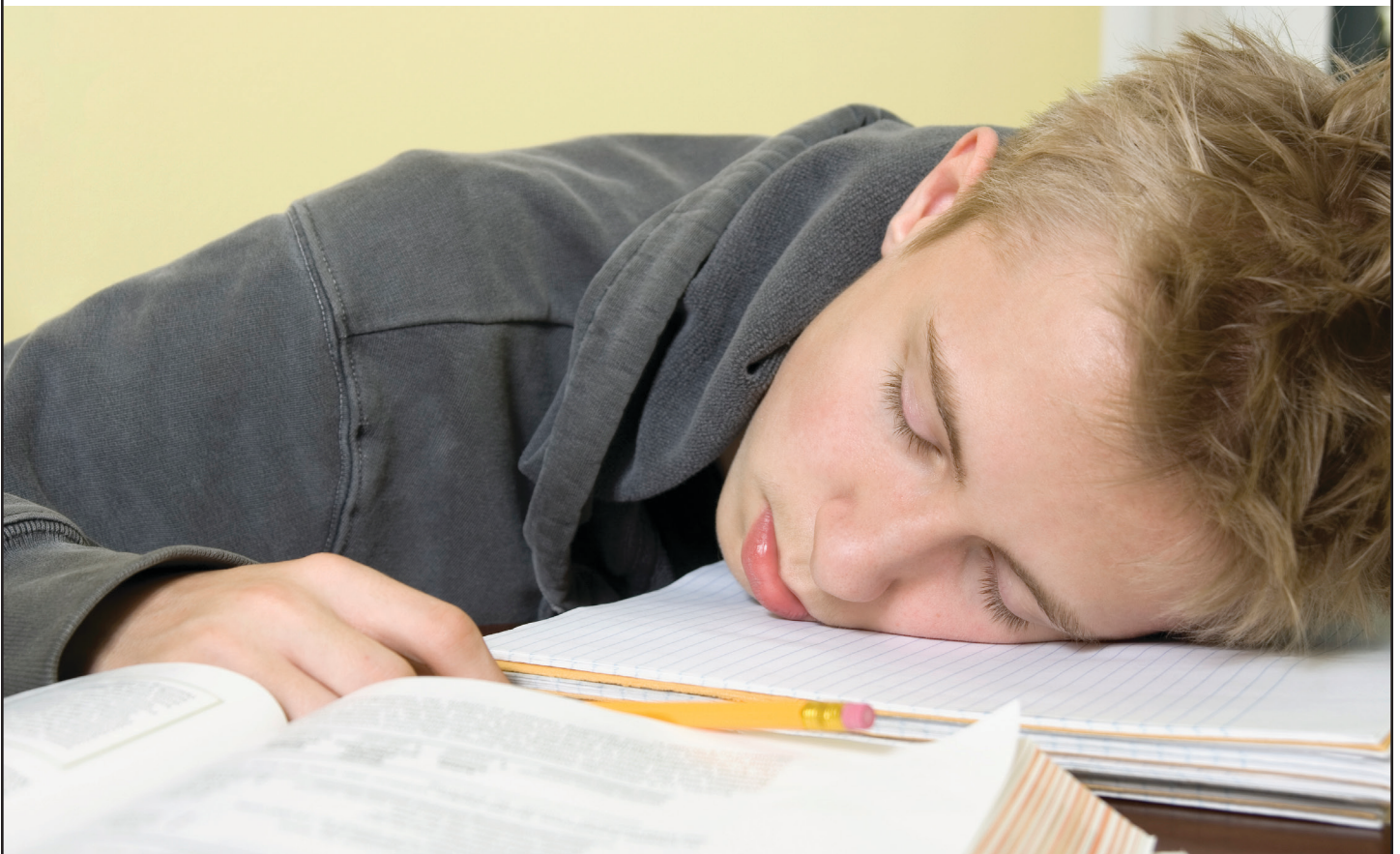


A 2020 VISION

FOR PUBLIC EDUCATION in ULSTER COUNTY

Later School Start Times for Adolescents

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The Center for Research, Regional Education and Outreach, SUNY New Paltz
Ulster County School Boards Association

Later School Start Times for Adolescents

The idea of later school start times for adolescents has become a front burner issue across the nation in recent months, in part as a result of the convergence of two streams of research (New York Times, 2014; Washington Post, 2014). First, biological scientists have shown that late-rising teenagers are not just lazy, as stereotypically assumed. Rather there is an emerging consensus among these researchers that sleep cycles change as children mature into adolescence, causing teenagers to fall asleep later in the evening and sleep later into the morning. Meanwhile a parallel body of research has identified multiple benefits of adequate sleep for adolescents. Recently, a study conducted by researchers at the Center for Applied Research and Educational Improvement at University of Minnesota, and funded by the Center for Disease Control (CDC) confirmed multiple academic, emotional, social, and health benefits that derive from additional sleep afforded by later school start times (Wahlstrom, 2014). Importantly, this study also shows that when school starts later—and is thus aligned with adolescent sleep cycles—adolescents actually get more sleep.

It was in recognition of these findings that U.S. Secretary of Education Arnie Duncan endorsed the idea of starting high school later in the day (August, 2013). In the last 10 years, school districts in California, Oklahoma, Georgia, New York, Connecticut, North Carolina, Kentucky, and Minnesota have changed schedules to accommodate later start times for their adolescent students. Currently, countywide school districts in Virginia and Maryland are considering changing the times of their first school bell, as are urban districts in St. Paul, MS and Richmond, VA. In 2009, members of the U.S. House of Representatives introduced House

Concurrent Resolution 176 (also known as the Zzz's to A's Resolution) in support of later school start times, and in 2014, a landmark bill passed by the Maryland legislature requires state health officials to conduct a study on the sleep needs of students and the experiences of schools that have shifted to later start times. These actions have propelled what has been a local conversation to a national, and statewide, arena (Washington Post, 2014; Kelley & Lee, 2014).

This policy brief summarizes the research on later school start times for adolescents and provides a framework for thinking about the implementation of this idea in Ulster County, New York. It is the work of the School and School District Structure study group, a subcommittee of *A 2020 Vision for Public Education in Ulster County*.

A 2020 Vision for Public Education in Ulster County was a symposium convened in November, 2013 to begin the process of proactively shaping a vision for public education in the county's communities. Stakeholders from eight Ulster County school districts gathered to use a regional lens to engage questions of teaching and learning, accountability, and school and school district structure. In doing so they self-consciously began the process of generating thoughts and ideas about ways to promote county-wide, regional thinking in the service of improving educational delivery. The School and School District Structure study group, with participation from numerous stakeholders with diverse perspectives, from multiple Ulster County school districts, continued this work through monthly meetings. Participants identified and researched issues for further consideration by the larger 2020 group. School start times for adolescents is one of these issues.



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Sleep and adolescents

Getting sufficient sleep is an important factor in the overall health for people of all ages, affecting memory and learning, attention capacity, and a range of emotional and physical health outcomes (Moller-Levet et al., 2013; Foster et al., 2013; Payne, 2011; Knutson, 2007). The amount of needed sleep, and the patterns and cycles of that sleep, differ for people of different ages. For youth, the circadian timing that drives sleep shifts as children develop into adolescence; wakefulness-inducing hormones (cortisol) persist longer throughout the day and sleep-inducing hormones (melatonin) are triggered later in the evening and last longer into the morning. This causes adolescents to fall asleep later at night and wake later in the morning than younger children or adults (Carskadon et al., 1997; Wolfson & Carskadon, 1998; Crowley et al., 2007). The presence in adolescents of sleep-inducing hormones (melatonin) further into the morning makes early morning functioning even more difficult for these youth (Carskadon et al., 1998). The difference between adolescent circadian rhythms and those of younger children and adults is as wide as three hours. (Kelley & Lee, 2014).

This does not mean that teenagers need less sleep. Researchers find that adolescents still require at least 9 hours of sleep each night (Hansen et al., 2005; National Sleep Foundation, 2000; Carskadon et al., 1998). It is physiologically natural for adolescents to fall asleep late at night and then sleep later into the following morning.

Notwithstanding this reality, the school day for adolescents usually begins between 7:00—7:45am. Moreover, students are required to rise early enough to board the bus or pull out of their driveways up to an hour in advance of these start times. Combined with the biologically-driven predisposition to stay up later, this makes getting the optimum 9 hours of sleep unlikely (Hansen et al., 2005; National Sleep Foundation, 2000; Carskadon et al., 1998). The result is a “circadian misalignment” with observable negative consequences for education and youths’ physical and mental health more generally (Hasler & Clark, 2013, pp. 558; see also Wahlstorm et al., 2014; Leger et al., 2013; Willingham, 2012; O’Malley & O’Malley, 2008; Hansen et al., 2005).



Negative effects for adolescents are academic, social, mental, and physical, and include:

- **Academic complications**

Research demonstrates that insufficient sleep is associated with decreased memory capacity and decreased capacity to sustain attention during the performance of academic tasks (Beebe et al., 2010). Studies show lower scores on quizzes and higher incidents of “inattentive” and “sleepy” behaviors—e.g. yawning or putting one’s head on the desk—for students who were deprived of adequate sleep than for these same students when they received adequate sleep (Beebe et al., 2010). Another study finds that less sleep—even if a student stays awake to study—results in greater academic problems, such as poor quiz scores or difficulty understanding academic material, and that these problems compound as the effects of lack of sleep accumulate over students’ high school careers (Gillen-O’Neel et al., 2013).

- **Greater risk-taking behaviors**

Research finds greater risk-taking behaviors, such as substance abuse (use of alcohol, cigarettes, marijuana); sexual activity, aggression, and lack of physical exercise, among adolescents who report insufficient sleep (fewer than 8 hours) (McKnight-Eily et al., 2011; see also Hasler & Clark, 2013; O'Malley & O'Malley, 2008; National Sleep Foundation, 2000).

- **Greater risk for depression**

Studies show that students who get inadequate sleep are more likely to suffer from depression, experience anxiety, and express suicidal thoughts (McKnight-Eily et al., 2011; Moore et al., 2009). Researchers have also found a relationship between sleep and adolescents' own sense of their emotional state, mood, and ability to regulate and control their emotions. Sleep-deprived adolescents (who get fewer than 8 hours of sleep) report more feelings of anxiety, irritability and hostility than their well-rested peers (Baum et al., 2014; Carskadon & Acebo, 2004). In one study, these self-reports are corroborated by parental reports (Baum et al., 2014).

- **Poorer physical health**

Incidents of obesity are higher among adolescents who get insufficient sleep: "for each hour of lost sleep, the odds of obesity increased by 80%" (Gupta, 2002, pp. 762). Athletes who got less than eight hours of sleep were 1.7 times more likely to suffer an injury than those who got more than eight hours of sleep (Milewski et al., 2014).

- **Greater risk of injury from accidents**

Research has found a relationship between adolescent car accidents and lack of sleep; in a study of driving records of 17—24 year olds, young people who reported the least sleep were 21 percent more likely to have been involved in a car accident than those who reported the most sleep (Martiniuk et al., 2013; see also Cirignotta, 2010).



Research that specifically explores the impact of later school start times finds multiple positive outcomes for adolescents in these areas of risk. And, importantly, research shows that adolescents get more sleep when school starts later and is thus more closely aligned with their natural sleep cycle (Wahlstrom, 2014; Boergers et al., 2014; Perkinson-Gloor et al., 2013; Edwards, 2012; Owens et al., 2010). Positive academic and health outcomes from later school start times include:

- **Better academic performance**

Researchers find higher grade point averages in core academic classes (Wahlstrom et al, 2014), higher grades in general (Carrell et al., 2011; Perkinson-Gloor et al., 2013; Short et al, 2013), and generally higher test scores (Edwards, 2012) for adolescents in schools with later start times.¹

- **Reduced tardiness and absences**

Studies find an increase in attendance, a decrease in lateness, and a decrease in excused absences in schools that have moved to later start times (Wahlstrom, 2014; Drake et al, 2003).

- **Less depression**

In a study of the impact of school start time on students' sleep habits and depressive mood, researchers surveyed students before a delay in start time was implemented (8:00am) and after (8:25am); on average, students report getting more sleep and experiencing fewer incidents of depression than prior to the change in school start time (Boegers et al, 2014; see also Owens et al, 2010). More generally, 92% of parents whose adolescent children attended school before and after a change to a later start time reported that "their children are easier to live with as a result of the change (to a later school start time)" (Wahlstrom, KCRW radio interview, 4/7/14).

- **Fewer car accidents**

In Fayette County, KY, adolescent car crashes were reduced by more than 16% in the two years subsequent to instituting a later start time for high schools

¹ Empirical evidence about outcomes on standardized tests is inconsistent (see Wahlstrom et al., 2014 and Hinrichs et al., 2011).

(Danner 2008). In Teton County, WY, the year after the high school first bell was delayed from 7:35am to 8:55am, car accidents for 16-18 year olds reduced from 23 to 7, a 70 percent reduction (Wahlstrom, 2014).² Likewise, in a study of adolescent car accidents and school start times, researchers found significantly higher accident rates for teenagers in a county with an earlier school start time than in a neighboring county with a later school start time. In both counties the majority of these accidents occurred during the morning commute to schools (Vorona et al., 2011).

Findings from the most recent research reveal “empirically-based positive outcomes for adolescents whenever the start time of their high school is moved to a later time—with the starting time of 8:30 AM or later clearly showing the most positive results” (Wahlstrom, 2014, pp. 52). It is this research, within the context of the larger body of empirical evidence about adolescents’ sleep needs and sleep cycles that has prompted educators and policy makers at the local, state, and national levels to advocate for later start times for schools attended by adolescents.

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Hurdles, and solutions, to altering school start times

Despite overwhelming empirical evidence about the benefits of sleep for all aspects of adolescent health, and the misalignment between adolescent sleep needs and school start times, hurdles to the implementation of later school start times persist. Researchers who documented the process of changing to later start times have identified the following hurdles and potential solutions (Wahlstrom et al, 2014; see also sleepin Fairfax.org):

- **Extracurricular participation**

There is a concern that later school start times—and therefore later school end times—will limit students’ ability to participate in sports, other after-school activities, and part-time employment. Evidence is mixed. Some districts saw an increase in participation in sports and others noticed improved athletic performance (National Sleep Foundation, 2000). Researchers also found that most employers asked student-employees to begin work after 4:00pm, so a later school end time did not impact employment (National Sleep Foundation, 2000). However, another study found that in urban settings later start times did result in less student participation in extracurricular and social activities and also created conflicts for students who worked after school, sometimes diminishing their earnings (Freeman and Wahlstrom, 1997). This same study found no effect of later start times on extracurricular participation and employment for suburban students. This remains an important issue that warrants close attention at the implementation phase of later start times.

Strategies for addressing extracurricular participation: Overall, districts that have shifted their school start times later have found ways to address concerns about extracurricular participation. These include providing lighting for sports fields so that practice can run later during seasons with early nightfall, and/or scheduling extra games and practices on weekends. Another idea has been to incorporate,

² This large reduction in teenage accidents was noted for two out of the four districts in Wahlstrom’s study (2014); the third district saw a smaller reduction (6%) and the fourth district saw an increase (9%). Wahlstrom attributes the increases in the fourth district to the geographic circumstances of that district.

where possible, an “activity period” into the school day so that, effectively, the day would not end later, even as it starts later. (In some schools, the last period of the day is a student-optional period during which some clubs operate or students may seek extra help if needed. Sports practices begin, generally, after this period has ended.)

- **Transportation**

Bus schedules are often linked and shared among schools and grade levels within a district; buses that drop high school students at school then return to pick up younger students. Moving the start time for students in upper grades may require a shift in transportation for other schools as well.

Strategies for addressing transportation: Solutions that do not involve the addition of bus runs include moving all the start times back so that all students go to school later, or “flipping” the start times of all district schools so that younger students go to school earlier and older students go to school later. Moving to a single bell schedule, so that all schools begin at the same time, can mean adding more buses, which is not always a feasible option with tight school district budgets.

- **Child care**

Some families use their older children to provide childcare for the younger ones while parents are still at work. “Flipping” the schedule, so that younger children leave for school—and get home—earlier than older children can present childcare challenges in the afternoon. Relatedly, if school districts move the start time of all schools to later in the morning, then some families may encounter morning childcare problems.

Strategies for addressing childcare issues: Some districts have worked with local organizations to provide additional before or after-school care for younger students. Others have worked with community partners to provide extra-curricular activities for younger students.

In Ulster County, region-specific hurdles have hindered the efforts of school districts to enact later school start times. For example, alignment with the countywide Board of Cooperative Educational Services (BOCES) schedule is an issue. BOCES provides classes on a regional basis to high school students from all of its component school districts. If one district unilaterally decides to push the start of its high school to later in the morning, this may impact the ability of that district’s students to get to a BOCES class on time.

Another regional issue is the scheduling of athletic events, since Ulster County districts compete against one another in sports.

Both of these challenges—the BOCES schedule and athletics—could be addressed through an alignment of Ulster County school districts’ schedules and a simultaneous shift to later school start times. The BOCES schedule could then be adjusted accordingly and athletic competitions scheduled, as currently, at the end of the school day. Alternatively, BOCES could, perhaps, establish a two-tiered schedule to accommodate different start times of component districts.

The range of educational and other benefits of later school start times for adolescents are compelling and well-established in the research. Most hurdles are logistical. This does not mean that these hurdles are not real or meaningful. However, it does mean that they are surmountable. How might this be done? How have others accomplished it?

Process of making the switch: case studies of implementation

There are many ways to implement later start times: “flip” the timing of high school and elementary schools so that high school students begin school later and elementary school students begin school earlier; move the start times of all schools to later in the morning; add additional buses so as to transport students of all ages to school concurrently; delay start time and maintain end time; or provide flexible start and end times.

There is growing experience with the change process. Already in New York State, Glens Falls switched its high school start time from 7:45am to 8:26am, and is reporting positive results; assistant high school principal Elisabeth Collins reported that data show, “our students are getting up to 30 minutes more of sleep a night, our discipline write-ups have lessened, our tardiness rate is not as severe as it was 2 years ago. And another very important point is that the students are failing fewer courses in their day” (Radio interview, KCRW, 4/3/14; Brian Lehrer show, 4/10/14; see also <http://www.gfsd.org/News/2013-14/041514NYCsleep.cfm>). More recently in Ulster County, the New Paltz school district has begun conversations about shifting the start time of its high school to later in the morning. Across the nation we are seeing that moving to later start times is, generally, a one-to two-year process, beginning with community conversations and forums about the benefits of later start times, and then moving on to discussions about logistics. Following are two case studies that briefly describe this process.³

Arlington, VA

Arlington Public Schools is a countywide school district located outside of Washington, DC. At the time that the district moved to later start times for its high schools, in 2001, it had 30 schools and approximately 19,000 students. (In comparison, all Ulster County districts together enrolled, collectively, approximately 24,300 students in the 2011-12 school year.) Prior to the change to later high school start times, there was a four-tier transportation protocol; high school began at 7:30am, middle school and upper elementary at 8:10am, early elementary at 8:50am and alternative schools at 9:20am. Arlington began its process by establishing, with community input, the five conditions that would have to be met for change to be implemented:

- any change to school start times would have to improve teaching and learning,
- no school would start before 7:50am,
- no one group would be disadvantaged by the change,
- extracurricular activities would not be significantly impacted, and,
- as funding was constrained, the change could not require additional buses.

Once the school board decided, after a comprehensive review of the research, to proceed with later high school start times, the superintendent appointed an interdepartmental team to study how to implement the change. This team developed twelve possible scenarios for implementation; each was studied for feasibility. All meetings were open to stakeholder participation. One committee, dedicated completely to public engagement, reached out to the community through newsletters and updates to PTAs, school district employee newsletters, press releases, updates on the district webpage, and an email account dedicated to receiving—and responding to—questions and concerns from the community about the start time change. Crucially, engagement with the public allowed all stakeholders to have input into the change. Also important, public engagement continued after a final proposal was selected; the team that was responsible for the implementation of delayed high school start times addressed critical implementation issues, and their solutions, through a series of white papers that were distributed to the community.

Arlington’s transition to later high school start times took approximately two and a half years. High schools there now begin at 8:15am, middle schools at 7:50am, and elementary schools at 8:00am, 8:25am, or 9:00am. An informal post-change survey revealed that high school students felt more alert and better prepared for school, high school teachers noted an increase in participation and student attention, and parents reported better attitudes from their high school students. However, middle school students—who now begin school the earliest—reported feeling less alert.

Wilton School District, CT

The Wilton School District implemented a new start time for high school students in the fall of 2003. At that time, there were 4,300 students in the Wilton School District, served in 5 school buildings (two k-2 buildings, one 3-5 building, one middle school and one high school. The high school enrollment was about 1200 students). Prior to the change grades 6-12 began at 7:35 a.m. and grades 3-5 at 8:15am. The K-2 schools began at 9:00am. A three-level bus route accommodated these three different start times.

³ This information was taken directly from the Start Later for Excellence in Education Proposal website, www.sleepin Fairfax.org/docs/CS.Arlington.pdf, www.sleepin Fairfax.org/docs/CS.Jessamine.pdf.

The shift to a later start time for the high school followed a two-year public engagement process—initiated by the Wilton League of Women Voters. The League played a convening, public awareness, and support role throughout this two-year process, attending multiple PTA meetings, convening its own public information sessions, and developing and implementing (in conjunction with the Norwalk Hospital Center for Sleep Disorders) a survey to garner student and staff input into the process. A major source of resistance to later start times was fear that change would preclude participation in the Wilton Sports Council, which represents local sports leagues. Public engagement efforts included working with the Council, which eventually came to support the idea.

In 2003, Wilton initiated a change in its school start times, flipping the schedule so that grades 3-5 begin at 7:35am and grades 6-12 begin at 8:15am. Start times for K-2 remain unchanged. Outcomes from the shift were predominately positive. Teachers reported better behavior and attention from students; interestingly, there was an increase in the participation in athletics. Parents reported more positive behavior and a survey, conducted by the Norwalk Hospital Sleep Disorders Clinic, found that students were getting more sleep. Students reported getting better grades. There were scheduling issues that arose with athletic events that were not played at home; in many instances, athletes were pulled from class earlier to attend away games. Overall, Wilton residents felt that the shift to later start times was a success.

Conclusion and next steps

Later school start times for adolescents is just one of several issues that the School and School District Structure study group, a subcommittee of the *A 2020 Vision for Public Education in Ulster County*, will present to participants in the larger 2020 Vision initiative for further consideration and possible action.

The mission of 2020 is to promote county-wide, regional thinking in the service of improving educational delivery. In Ulster County, the regional obstacles to implementation of a later school start time include scheduling with Ulster BOCES in the delivery of valuable educational services to students and potential coordination of sports programming. Aligning schedules and calendars, regionally, could mitigate these obstacles.

The research on later school start times is compelling and clear. Now education stakeholders in Ulster County must come together to decide whether this is a change that we want to embrace and if so, how we should go about doing that. While decisions must be locally-based and supported, regional implementation can facilitate the process.

The School and School District Structure study group hopes that the issue of later school start times will be the subject of thoughtful, measured deliberation at the reconvening of *A 2020 Vision for Public Education in Ulster County* in December, 2014.

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