

Appendix U

Community Impacts from Other Jurisdictions Changing to Later HS Start Times, And Other Local Data

One striking element in looking at reports from other jurisdictions that have changed to later high school start times is that the Community Impact issues in each are very similar to those in Fairfax County. There were serious concerns about sports and extra-curriculars (including availability of coaches, fields and gyms), child care, teacher impact, community acceptance, and disrupted parent schedules. Questions were raised about the benefits to be gained.

Follow-up studies and reports have shown that the jurisdictions that have made the change found few negative impacts and significant positive ones:

- High school students did get more sleep after the change
- Sports and extracurriculars were not negatively impacted (in fact, in some cases, participation and performance rose)
- Parents and teachers quickly accepted and adapted to the change, with high positive ratings by both
- Child care was not as big an issue as feared
- Students and teachers both report higher levels of student alertness and participation in class, particularly first periods
- Absenteeism, tardiness and illnesses declined
- Family and peer relationships improved
- School disciplinary actions and referrals to counselors declined
- In one study, teen traffic accidents were found to decline while rates in surrounding jurisdictions rose

One exception to the smooth transition was Fayette, KY, one of the early adopters, which had significant difficulty in reaching a consensus and in gaining community acceptance. Some observers attributed this to the lack of community and stakeholder involvement in the process. But Fayette is reported to be happy with the change nearly a decade after making it, and nearby Jessamine learned from its neighbor's experience and itself succeeded in having a smooth transition by taking its time and fully involving the community.

The experiences of other jurisdictions and communities are grouped by subject matter in the sections that follow. References for these items are in Appendix E.

SPORTS AND EXTRA-CURRICULAR ACTIVITIES

Minnesota: Sports and activity participation continued at the same rate. Practices were shortened. There was generally positive feedback from coaches after the change, but

some were still firmly opposed. Some students had to leave last period of day early for away games and meets in some cases.

- *U. of Minnesota CAREI Report (excerpt):* In all districts with the later start in the morning, after school athletic and other activity practices, extended-day programs, and rehearsals were shortened, with students arriving home at a later hour than they did in 1997. However, actual participation rates in after school activities, including sports and co-curricular activities, remained at the same levels after the implementation of the later high school start time as they had been before the change. Coaches and activity leaders were generally supportive of the change because they saw students who were less tired and seemingly more mentally alert at the end of the day. A few coaches whose sports involved long practices and traveling long distances for events were outspoken about their dislike of the later start and dismissal time for the school day.
- *Minnesota study:* Compared three demographically similar jurisdictions with different HS start times (8:30 am, 7:25 am and 7:15 am) and found students at all three participated in after school sports and extra-curricular activities at similar rates. The study concluded that later start time did not restrict participation.

Arlington, VA: Two-thirds of its students had the same or increased participation in extracurricular activities after start times were changed. School staff was able to accommodate extracurricular activities, and were able to minimize the impact.

- *June 2005 Impact Study; Summary (excerpts):*

How well did we implement? It appears from the data that the implementation of the new start times for high schools was done reasonably well and with a minimal amount of disruption. Few parents called the APS hotline set up during the summer of 2001; and few teachers reported leaving the system to teach elsewhere because of the change to the schedule. Further, implementation allowed students to continue participating in extracurricular activities both at the middle and high school levels. For example, 66% of the 255 middle school students indicated that there was no difference in their participation or that they participated in more after-school activities after the start time change than they did before the change. Similarly, about 65% of the 231 high school students who were surveyed responded that there was no difference in their participation or that they were participating in more after-school activities following the time change.

How effectively were the system's resources used to achieve the identified goals? The transportation system handled the switch with minor glitches, and the school staff did an admirable job in accommodating the changes, including minimizing the impact on extracurricular activities. (From the study) It appears from the responses of high school students that students were able to participate in after-school activities after the start time changes. That is, about 65% of the students indicated that either there was no difference in their participation or that they were participating more in 2001-02.

Wilton, CN: Sports was a serious concern upfront, but the fears proved to be unfounded. Wilton actually saw increased sports participation and one of its best sports seasons ever. The only problem proved to be some students having to leave last period early for some away games.

- *NSF Case Study (reviewed by Wilton school system – excerpt):* Wilton faced two main challenges in proposing a change in start times. First, Wilton is a self-described “sports town.” The Wilton Sports Council, a body representing the interests of the little league, soccer clubs and other private sports organizations, was a tough opponent to the change. They insisted that any change in start times would lead to the expulsion of Wilton teams from the athletic conference, a price too high to pay for any other possible benefit. Second, there were reservations raised by the parents of younger children, who would not reap the benefits of changing starting times, especially if their children now would have to arrive earlier.

Teachers who also coached at the schools were concerned before the change that they would be unable to make it to practices, but this also turned out not to be a problem. Wilton High School had one of its best athletic seasons, even earning several Connecticut State championships. The high school athletic programs saw a continued rise in participation. Even at the 35 grade schools participation increased in extracurricular activities.

The only problems were for those students who had to be pulled out of class early for away games, and for students who participated in more than one sport, although this full schedule would be difficult with any school start time.

- *League of Women Voters of Connecticut Concurrence Statement, 2005 (excerpts):* In Wilton, the percentage [of students participating in extracurricular activities] has been estimated at more than 75%. Because many student organizations and clubs meet weekly or monthly – frequently outside of school hours, in the morning or evening – a shift in the school day schedule should affect these organizations only minimally, if at all.

Sports: A school system can both maintain strong participation in interscholastic athletics and align school schedules with adolescents’ biological clocks. In developing a plan for later school start times; a school district should consider creative, “out-of-the-box” approaches to the scheduling, duration, and frequency of athletic practices. For instance, morning practices, already common for swim and hockey teams, would require only those athletes choosing to play a sport to wake up early, not the entire student body. The cooperation of interscholastic leagues in scheduling games is important. Some towns have granted team members an occasional early dismissal for travel time to out-of-conference away-games. Interestingly, school systems, including Wilton, which have made the change to later start times, continue to enjoy robust participation in athletics and a great deal of success on the field.

Edina, MN: *Edina public schools later start time summary (excerpt):* There has been no drop off in after-school sport or extra curricular activities, as was predicted. In fact, there has been a slight increase.

DROP-OUT RATES / AT-RISK STUDENTS

Minnesota: declined significantly (measured by “continuous enrollment”)

- *U. of Minnesota CAREI study (excerpt):*
Enrollment: A key finding of this study is that the percentage of high school students who were continuously enrolled in the same district or in the same school had statistically significantly risen since the 1995–1996 school year. Concurrently, the percentage of students who were not continuously enrolled had decreased significantly. This means that an increasing number of students were staying in the same district or in the same school for 2 or more years, and the number of students who moved in and out of the district or moved from school to school declined steadily.

The initial findings from this longitudinal study lead to important considerations for school administrators. Addressing the needs of students who are at-risk learners, at risk for dropping out of school, or both is a universal concern. These are often students who have insufficient credits for graduation because they have missed too many first and second hour classes. The study reveals that attendance rates improved significantly when the high schools initiated the later start time; this suggests that changing start times is one way to recapture those students who might otherwise not complete high school.

ATTENDANCE/TARDINESS

Minnesota: improved significantly for the most mobile students (those not “continuously enrolled”) and for most ethnic groups, grades 9-11.

- *U. of Minnesota CAREI study (excerpts):* In the 2-year period (school years 1995–1996 and 1996–1997) when school started at 7:15 a.m., the average rate of attendance rate for non-continuously enrolled students in grade 9 was 72%. During the 3 years after the later start time was in effect, the average rate climbed to nearly 76%. This change in attendance rate was highly statistically significant (at the .001 level). That is, the change in rate is not likely to be merely a chance occurrence. Equally notable were the improvements in attendance rates for students in grades 10 and 11. Their combined rates moved from an average of 73.7% with the early start to 77.5% with the later start, with the largest gains seen among students in grade 11.

Second, after the change in start time, attendance improved for Asian, Hispanic, Black, and White students in grades 9 to 11. Attendance rates for all ethnic groups in grade 12 were the same before and after the change in start time.

(from Summary): The students benefited the most. For example, attendance rates for all students in grades 9, 10, and 11 improved in the years from 1995 to 2000, with the greatest rate of improvement for grade 9 students. Furthermore, students who did not have a pattern of continuous enrollment in the school district showed a marked

improvement in their daily attendance rates after the initiation of the later start time in 1997–1998.

- *Minnesota study*: compared tardiness at three similar jurisdictions with different HS start times (8:30 am, 7:25 am and 7:15 am) and found a significantly lower rate of tardiness due to oversleeping at 8:30 am starting school.

Edina, MN: “We have measured fewer absences and fewer students arriving late”
(*Edina later start time summary*)

Wilton, CN: Did not see any change in attendance or tardiness.

Brevard County, FL: Significant amount of tardiness and absences were reduced from first periods.

STUDENT HEALTH / DEPRESSION

Minnesota: Days home sick in past two weeks significantly lower for 8:30 am start time school (0.28) compared with 7:25 or 7:15 am opening school (0.42 and 0.47, respectively). There was evidence of significant improvements in depression measures.

Edina, MN: Students in Edina said they ate breakfast more.

- *U. of Minn. CAREI study (excerpt)*: The students whose high schools started at 8:30 a.m. or later reported statistically significant less depressive feelings on those questions than did the early start students (p ranged from $< .05$ to $< .001$). Similarly, scores on questions measuring daytime sleepiness, the struggle to stay awake in class, and sleepiness while doing homework all showed statistically significant better outcomes for the students whose school day started later. For example, students in late-start schools reported being less likely to arrive late to class because of oversleeping, or to fall asleep in a morning or afternoon class, or to feel sleepy while taking a test. They also reported statistically significant fewer feelings of sleepiness when at a computer, reading, or studying. (More details about these findings are at: http://education.umn.edu/CAREI/Programs/start_time/VIIexec_summ.html).

Many of the benefits of the later start time were similar for both urban and suburban students, with their actual scores being nearly identical despite the differences in their local economic conditions.

Fairfax County:

- 2005 Youth Risk Survey: Shows 33.9 percent of Fairfax County 8th to 12th graders show classic signs of depression (“During the past 12 months felt so sad or hopeless almost every day for weeks or more in a row that they stopped doing some usual activities.”). Fifteen percent of 8th-12th graders (including 18.9 percent of females) had considered suicide.

PARENT / PEER RELATIONSHIPS / ATTITUDE

Minnesota: improved relationships with peers and parents.

- *U. of Minn. CAREI study (excerpts):* High school principals were personally interviewed about what changes, if any, they saw in their schools as a result of the change to a later start. The most common response was that the mood of the students in the hallways, during passing times, was now calmer. They also cited that calmness as being evident in their student cafeterias during lunch. As a result, five of the eight principals noted that they were dealing with fewer disciplinary referrals to their offices. With fewer students arriving tardy, their offices were much less congested in the morning, and there were fewer record-keeping tasks associated with tardiness and students dropping out of their first-hour classes. Seventeen school counselors and three school nurses also provided personal comments, noting that significantly fewer students were coming to them to report peer relationship problems and/or difficulties with their parents. They echoed the principals' perceptions that the overall mood in their schools was calmer, with the students' temperaments seeming much more even.

Parents who attended their child's high school conference were asked to complete a written survey; about 92% of suburban parents supported the change. Their negative comments centered on the later times that their children were now coming home after participating in after school activities or sports. Urban parents were interviewed in focus groups; their reactions were more mixed, often with negative comments related to changes required in work schedules and transportation limitations. Both urban and suburban parents noted that their high school children were "easier to live with." They found that they were having fewer confrontations with their children in the morning about getting out of bed and getting to school on time. They also commented that they were having more actual conversations with their teenage children in the morning, finding that they had new "connection time" with their child.

One issue brought up and echoed by all respondents was that the new schedule makes conferences between counselors and parents easier to schedule. Parents appreciate the convenience of later meetings, and they feel more free to ask the counselor for a 4:00 PM or even later meeting.

Arlington, VA:

- *June 2005 Impact Study (excerpts):* The point was raised before the implementation of new start times that the impact would be felt not only on students, teachers, and the school system as a whole, but also on families. For example, there was a concern that with older siblings in school later, there would be an increased demand for Extended Day or a greater demand for the after-school Check-In Program at middle schools. The concern turned out to be unfounded. Extended Day staff did not see an increase in demand for Extended Day that could be attributed to the start time change.
- *Summary: Impact on Groups Other than High School Students:* In general, it appears that teachers and families adjusted to the change in school start times. Teachers did not leave the system because of the change and there was not an increased demand for Extended Day services.

Wilton, CN: *NSF Case Study (excerpt):* Teachers recognized a change in student behavior: they were more awake, had better attitudes and were overall more pleasant. Parents also reported changes in their kids' attitudes, and became increasingly supportive as they adjusted to the new routines.

Jessamine, KY: *NSF Case Study (excerpts):* Jessamine County parents and students were very accepting of the results of the change. There were very few complaints about the change, and few problems with the transportation situation... The community, especially the teachers, was supportive of the proposed change, and has seen positive results.

TRANSPORTATION COSTS

Minnesota: no increase in bus costs

- *Excerpt:* Transportation costs are often cited as the reason that the change will not work in a district. In fact, neither the suburban school district of Edina, Minnesota nor the urban district of Minneapolis, Minnesota, found that the change to a later start increased their transportation costs. The same buses and routes were used; the only changes made were the times the buses used the routes.

Arlington: no increase in resources.

Wilton, CN:

- *(LWV Concurrence Study, 2005 (excerpt):* Because Wilton's new schedule did not involve leasing any new buses, the implementation process was made simpler for the administration, and parents and students reported an adjustment period of only about two months to the new schedules.

Jessamine, KY: No additional drivers were required to make the transportation work.

Brevard County, FL: Did not need to increase the number of buses. The transportation time actually decreased between serving schools by fifteen minutes.

AUTOMOBILE ACCIDENTS

Background: Car crashes are the Number 1 killer of teens, according to the National Highway Traffic Safety Administration (NHTSA). Experts attribute the high rate of car crashes to many factors, including inexperience, speed, risk-taking, use of drugs and alcohol, as well as drowsy driving. A National Sleep Foundation 2006 poll of teens found that 51 percent said they have driven drowsy in the past year, and 15 percent at least once a week. This rose to 68 percent and 20 percent, respectively, by 12th grade. In addition, 9 percent of 12th-graders said they have actually fallen asleep at the wheel in the past year. More than half (55%) of all asleep-at-the-wheel car crashes involve drivers 25 and younger, according to a North Carolina study. According to a 2007 Children's

Hospital of Philadelphia/State Farm study of teen driving habits (based on a survey of 5,665 students): drivers who are younger than 25 cause the majority of drowsy driving-related crashes. Although only half of teens report seeing drunk driving by teen drivers at least sometimes, three-fourths of respondents report seeing fatigued driving by teens.

- (Excerpt from Advisory Council on Instruction research report): The frequency of crashes in which the driver was judged by state police to not be intoxicated but judged to have been asleep are highest for young people between the ages of 16 and 20. The highest most frequent time of occurrence for sleepy drivers is between 5 AM and 8 AM.
- According to an NHSTSA expert panel on Driver Fatigue and Sleepiness: “Young people, and males in particular, were the most likely to be involved in fall asleep crashes.”
- “Fall asleep crashes may kill more young Americans than alcohol related crashes.”(Mark Mahowald, MD, in the quarterly *Sleep Medicine Alert*, Summer 1999, published by the National Sleep Foundation.)

Minnesota: One reason cited for switch to later HS start times was to lower risk of teen auto accidents.

- *Consequences of Unmet Sleep Needs (from Final Report Summary):* Risks for adolescents lacking sleep include daytime sleepiness, vulnerability to catastrophic accidents (echoed by Dr. Mark Mahowald, director of the Minnesota Regional Sleep Disorders Center at Hennepin County Medical Center in Minneapolis), mood and behavior problems, increased vulnerability to drugs and alcohol, and development of major sleep disorders (Carskadon, 1990).

Fayette, KY: A study looked at the rate of traffic accidents in the school system before and after the change to a later start. While the statewide rate of crashes increased 8 percent over the two years after the change, Fayette County, which was previously one of the counties with the highest crash rates, reduced its crashes by over 15 percent.

- *Summary from study accepted for publication in Adolescent and Family Health (courtesy of Dr. Fred Danner, U. of Ky.):*
Moving the school start time one hour later for all of the adolescents in one large county school district (the only county to do so during the period of this study) resulted in meaningful increases in sleep time, an increase in the percentage of students who got an adequate amount of sleep (8-9 hours cf., Carskadon, 1999) and a decrease in catch-up sleep on weekends. It was also associated with a significant drop in auto collision rates for high school aged drivers in that county, while crash rates increased in the rest of the state during the same time period. These findings are not necessarily causal since they are not the result of a direct assessment of the sleep habits of drivers who did and did not have accidents. However, these data are consistent with the idea that allowing adolescents to sleep more on school nights by delaying the start of school not only results in them sleeping more but also may have a measurable positive effect on their driving safety. (Fred Danner, PhD, Department of Educational and Counseling Psychology, 243 Dickey Hall, University of Kentucky, Lexington, KY, 40506. USA; Barbara Phillips, M.D, Department of Internal

Medicine, MN618 Medical Science Building, University of Kentucky, Lexington, KY, 40506. USA.)

CHILD CARE

Jessamine, KY: The only complaints were about childcare for younger students. The local YMCA responded by offering before school care for middle school students who now had the latest start times.

Brevard County, FL:

- **Negative:** After school care needs increased.
- **Positive:** Eliminates before school care needs.
- **Middle School:** They hold before school activities rather than after school, using own transportation.

Arlington, VA:

- *June 2005 Impact Study (Summary):* **What happened that was unexpected or unintended?** An unexpected outcome was the lack of added demand placed on Extended Day and the paucity of complaints registered by parents and families.
- *Impact on Groups Other than High School Students:* In general, it appears that teachers and families adjusted to the change in school start times. Teachers did not leave the system because of the change and there was not an increased demand for Extended Day services.

Fairfax County, VA – JEB Stuart High School: Data from 2004-2005 parent and student surveys at JEB Stuart High School indicate that later school schedules would have little impact on student jobs, parent work schedules or child care arrangements. Nearly 90 percent of parents said a later school day would not cause a problem for their work schedule or current child care arrangements. Of the few for whom there was a potential problem only about one quarter said it would be difficult to make a change. The net result is that less than three percent had a conflict that they believed would be hard to resolve.

JOBS / EMPLOYERS

Minnesota – Minnesota Start Time Study (excerpt): The overall impression that employers, managers and human resource workers gave was that there would be little or no impact from a later school dismissal time. Four employers stated there would be an impact in the after-school work shifts, but when asked if a one hour later start time would have an impact, three said that one hour would not have much of an impact, that they "could deal with it" or that they are "flexible." Most of the employers said that their high school employees either do not start right after school or that they could "adjust the day workers" shifts to accommodate a later arrival of the students.

Fairfax County: Data from 2004-2005 parent and student surveys at JEB Stuart High School indicate that later school schedules will have little impact on student jobs, parent work schedules or child care arrangements.

- Of the 23 percent of Stuart students who work, the average start time for work on a school day was 4:22 pm, more than two hours after the current school end time. Students now start work as late as 9 pm on school days.
- In the Stuart parent survey, nearly 90 percent said that a later school day would not conflict with a job held by their student. Most of the remainder said it would be easy for their students to change work hours to accommodate a later schedule.
- The 1998 Task Force interviewed local employers and concluded that later start and end times would NOT interfere with student work opportunities. They found that employers generally use student workers on weekends and evenings, schedules that would not conflict with later end times. In a poll of fifteen Fairfax businesses employing high school students, they were unanimous in stating that the later start time would not impact student work hours and that they would continue to hire students. The following employers were contacted: Baskin Robbins Ice Cream, Bath and Body, Blockbuster Video, Burger King, Friendly's, Giant Food, K-Mart (Burke), Kohl's, Multiplex Movie, Penney's (Fair Oaks), Safeway, Subway, Taco Bell, Target (Burke), TCBY (Report; pp 27-28).

JUVENILE CRIME & GANG ACTIVITY / PUBLIC SAFETY

Arlington (*advisory Council on Instruction report*): The opportunity that early dismissal presents for anti-social, criminal and high-risk behavior has also been cited as a concern. According to Arlington County Deputy Police chief John Haas, "We would love to see down time between high school dismissal time and the start time for extracurricular activities eliminated entirely, thus eliminating opportunities for mischief and criminal activity.

Minnesota: found fewer referrals for disciplinary action at schools.

TEEN SLEEP IMPACTS

Minnesota: Studies found Minneapolis students with an 8:40 am start time got an hour more sleep per school night than students in comparable high schools that started an hour earlier. Follow-up three years later found that the students with later start times were still getting an hour more sleep per school night:

- *Minneapolis Public Schools Start Time Study, Executive Summary, August 2001*: Student Survey - Preliminary Results The School Sleep Habits Survey developed by Bradley Hospital at Brown University was administered to a stratified random sample of Minneapolis Public School 9th – 12th graders in December, 1997 (school year 1997-98) and again in January, 2001 (school year 2000-2001). All students in both years attended schools with 8:40am start times:

- Students in the 1997 survey reported a mean school day bedtime of 10:48pm. This time is statistically similar to the 2001 reported a mean bedtime of 10:41pm.
- Students in 1997 reported a mean weekend bedtime of 12:40am, statistically similar to the reported weekend bedtime of 12:42am in 2001. Likewise, students in 1997 reported a mean weekend wakeup time of 9:51am, while students in 2001 reported a mean weekend wakeup time of 9:49am, not a statistically significant difference.
- Minneapolis high school students continue to get an hour's more sleep each school night or obtain five more hours' sleep per week than students whose high schools begin an hour earlier than Minneapolis schools. This finding supports the medical researchers' finding that nearly all teenagers become sleepy at about 11:00 PM. It also lays to rest the fears and expectations that a later start would mean that Minneapolis students would just end up staying up an hour later on school nights.

<http://cehd.umn.edu/CAREI/Reports/docs/SST-2001ES.rtf> (Executive Summary)

<http://cehd.umn.edu/CAREI/Reports/docs/SST-2002Bulletin.pdf> (see pp. 12-14)

Wilton, CN: High school students got 35 minutes more sleep on average after 40-minute later start time change.

- NSF Case Study (excerpt): The results have been impressive: students are getting more sleep and are healthier and happier.
- The following fall, the local sleep disorders center administered a sleep survey in the high school, with results showing that the students were, in fact, sleeping an extra hour each morning.
- The Norwalk Hospital Sleep Disorders Center, which conducted the sleep study before the change, continued with a follow up survey to assess the impact. They used a truncated version of the self-administered School Sleep Habits Questionnaire, which asked questions about sleep, sleepiness and grades. The results have shown that Wilton High School students are getting 35 minutes more sleep than before the change. The number of students who reported that daytime sleepiness was not a problem doubled. Their bedtimes did not change.

Fayette, KY: NSF Case Study: Students in every grade from 6-12 averaged more sleep in the year after the change, up to 50 extra minutes in the 12th grade. The percent of high school students getting at least eight hours of sleep per night went from 21%-51%.

TEEN ACADEMICS IMPACTS

Arlington, VA *June 2005 Impacts Study, Summary* (excerpts):

- **What changes happened for the intended recipients?** Survey data from students suggest that high school students were more ready to start school, were more alert,

and participated in class discussions and activities more frequently after the change in start time than in the year prior to the change. This trend was especially apparent with regard to class participation. Forty-two percent of the high school students reported that they participated in discussions or activities during their first period classes “all of the time” during the 2001-02 school year. In contrast, only 31% of these students responded in the same manner when they were asked about the 2000-01 school year. Likewise, high school teachers reported dramatic increases in the number of first period students who were alert, prepared, and participatory.

- **How well was our approach validated?** The school start-time change was made upon the recommendation of the ACI [*Note: Instruction staff*] and after considerable deliberation by the School Board and senior officials of the Arlington Public Schools. Research on the impact of school start times and adolescent behavior guided the decisions about changing the schedules, and this study concludes that the change had its desired impact on the main beneficiaries, high school students. On the other hand, the compromises that went into the switch, especially vis-à-vis middle school students [*switching MS to an earlier time*], seem to have kept adverse consequences within acceptable limits.
- **Is this the most effective way to achieve success?** It appears this change came at the expense of middle school students (many of whom are also adolescents) [*MS switched to earlier time, before HS*], and a more effective approach might have been to shift elementary start times. Given the complications of bus schedules and parents’ work schedules, this was not possible.

Summary: Start Time’s Impact on Academic Achievement as Measured by Grades, Absences, Times Tardy and Perceptions:

- The first period grades of both cohorts of high school students – that is, the classes of 2003 and 2004 – improved slightly after the start time change in 2001. The change, however, was so slight that it did not represent a change in letter grades.
- In general, more high school students reported feeling ready to start school and alert during their first period class after the school start time change
- Higher percentages of teachers agreed that their students were more alert, prepared, and participatory after the start time change than before.

Minnesota: found slight grade improvement but not statistically significant. Kids more alert, prepared for first class of the day.

- *Changing Times: Findings From the First Longitudinal Study of Later High School Start Times* (Kyla Wahlstrom, NASSP Bulletin - Vol. 86 No. 633 December 2002): Given the numerous obstacles to obtaining “clean” data, the analysis took nearly a year. In the end, the comparison of students’ letter grades for 3 years prior to the change (starting time of 7:15 a.m.) and 3 years after revealed a slight improvement in grades earned overall, but the differences were not statistically significant. The trend lines for letter grades earned for all grade levels 9 through 12 for the years of the later start time are on an upward (positive) slope. Students’ self-report from a written survey on their grades earned corroborate this finding.

Edina, MN:

- *Edina Later Start Time Summary:* Parents, students and staff all agree it has been a good change. Teachers report more alert students and improved learning beginning at 8:30 as compared to the 7:25 start.
- *CAREI Case Study on Edina:* There seemed to be a general agreement among all eight [teachers] who said that, during first hour, they doesn't have “people with their heads down on the desk, they seem to be more engaged in what they're doing; they seem to be more focused.”

A few students said they are doing better academically because they are more awake. One student shared, “I have only fallen asleep once in school this whole year, and last year I fell asleep about three times a week.” Another student added that she's “more alert and doesn't 'zone out' as much.” On a similar note, a student said, “I feel I pay better attention because my sleep schedule is closer to my normal sleep pattern.” Two students added that it feels a lot better now that they leave for school when it is light out, whereas last year during the winter it was dark when they left for school.

BEFORE & AFTER-SCHOOL ASSISTANCE

Arlington: *June 2005 Impact Study:* About half of the high school teachers who responded to the teacher survey indicated that they saw about the same number of students before school in 2001-02 as they did in 2000-01. About 13 percent indicated that they saw more students before school and about 13 percent indicated they saw fewer students before school in 2001-02.

When asked about the number of students they help after school, about 35 percent of the high school teachers responded “about the same number of students” compared with “last year.” About 13 percent reported helping more students after school whereas about 38 percent reported seeing fewer students after school during the 2001-2002.

COMMUNITY ACCEPTANCE

Minnesota: Parents who attended their child's high school conference were asked to complete a written survey, and about 92% of suburban parents supported the change.

Arlington: *June 2005 Impact Study, Summary:*

- **How well did we implement?** It appears from the data that the implementation of the new start times for high schools was done reasonably well and with a minimal amount of disruption. Few parents called the APS hotline set up during the summer of 2001.
- **What happened that was unexpected or unintended?** An unexpected outcome was the lack of added demand placed on Extended Day and the paucity of complaints registered by parents and families. Although not included in the data analyzed for this report, an information telephone line was set up prior to the start time change to

answer parents' questions and gauge the community's attitudes about the change. Few parents called the information line with questions or concerns.

- **How satisfied were the users and clients?** Based on analysis of survey data, the high school students seemed satisfied with the change; and the middle school students were less satisfied. [*MS students were changed to an earlier time.*] For example, 42% of the high school students indicated on the survey that they liked the 2001-2002 start time better than the 2000-2001 start time. Only 22% of the middle school students expressed the same preference.

Arlington's Advisory Council on Instruction Report (telephone survey):

- 60% of the respondents were concerned about their teenagers being too sleepy to learn effectively at 7:30 in the morning.
- About 75% of the respondents favored a later start time. The most popular start times were 8:30 (34%) and 8:00 (26%). About 20% favored the current start time.
- For the "least popular" start time, 52% chose "later than 9:00" and 31% chose 7:30. Nobody chose 8:00 or 8:30 as the worst time.

Wilton, CN:

- *NSF Case Study:* The new schedule was implemented in the fall of 2003. Because Wilton's new schedule did not involve leasing any new buses, the implementation process was made simpler for the administration, and parents and students reported an adjustment period of only about two months to the new schedules.

The three impacted schools – middle, high and upper elementary – participated in a survey initiated by the Parent Teacher Student Association that was presented to the Board of Education at the end of the first year of the new schedule. Large majorities at all three schools reported satisfaction with the change.

- *LWVs of Connecticut Concurrence study, Sept. 2005:* At the close of the first year of the new start time, Wilton's PTAs surveyed the high school, middle school, and upper elementary school communities to determine satisfaction with the new start time. Responses at all three schools were overwhelmingly positive. Also, the Norwalk Hospital Center for Sleep Disorders did surveys of WHS students' sleep patterns before and after the time change. Wilton students report getting an average of 55 minutes more sleep each night after the change. The League of Women Voters has held morning coffee meetings with the principals from all three affected schools to gauge progress over the past two years, with very positive reports from all. During the first year, there were occasional complaints about athletes being late for "away" athletic events. Also, during the second year, in response to parental concerns, the Board of Education adjusted the early bus pick-up times for Wilton's upper elementary school. More importantly, however, no one questions the benefits of the change for Wilton's middle school and high school and no one has recommended returning to the former schedule.

Fayette, KY: NSF Case Study (had a very rocky decision-making process, strong opposition and changing decisions from School board, according to NSF): Now, seven years after the change, you would have a hard time getting Fayette County to go back.

Everyone has adjusted to the different routines, and the students and parents appreciate the more healthy approach to education.

Jessamine, KY: The community learned from the difficult experiences of nearby Fayette, took its time and involved many stakeholders. They educated the community on teen sleep needs, and did extensive surveys (using nationally recognized survey tools) of teen sleep habits and of staff and parent views. Jessamine County parents and students were very accepting of the results of the change. There were very few complaints about the change, and few problems with the transportation situation.

- *NSF Case Study:* The implementation of the change was very smooth. Because Jessamine took their time in studying the issue and included all important decision makers in the process (including transportation directors), the changes were made easily and with little opposition. No additional drivers were required to make the transportation work. The only complaints were about child care for younger students. The local YMCA responded by offering before school care for middle school students who now had the latest start times.

Edina, MN: *Edina Later Start Time, Summary:* Parents, students and staff all agree it has been a good change. It is unusual to have so much agreement about an issue in education today.

TEACHER IMPACT

Arlington: *June 2005 Impact Study:* About 75 percent of both high school and middle school teachers indicated that the change in school start times did not cause them to consider changing the level they teach or where they teach. Similarly, few teachers (under 10 percent) responded that they seriously considered teaching at another level. However, about 13 percent of the high school teachers and 10 percent of the middle school teachers did report that they considered teaching in another county as a result of the change. We do not know from these data if any teachers did switch positions because of the time change. According to the Department of Personnel Services, no teachers left Arlington Public Schools in 2001-2002 citing the change in start times as the reason for their departure.

- *Summary: Impact on Groups Other than High School Students:* In general, it appears that teachers and families adjusted to the change in school start times. Teachers did not leave the system because of the change and there was not an increased demand for Extended Day services.
- **How well did we implement?** It appears from the data that the implementation of the new start times for high schools was done reasonably well and with a minimal amount of disruption. Few parents called the APS hotline set up during the summer of 2001; and few teachers reported leaving the system to teach elsewhere because of the change to the schedule.

- **What changes happened for the intended recipients?** Survey data from high school teachers showed that higher percentages of teachers agreed or strongly agreed with the statement that their first period students were alert, prepared, and participatory in 2001-02 than agreed with the statement as it applied to their students from the previous year (before the time change).

SOURCES / LINKS

(Note: Many other references can be found in Appendix E.)

Minnesota:

“Changing Times: Findings from the First Longitudinal Study of Later High School Start Times,” Kyla Wahlstrom, associate director of the Center for Applied Research and Educational Improvement (CAREI) at the University of Minnesota, NASSP Bulletin, Vol. 86, No. 633, December 2002.

<http://cehd.umn.edu/CAREI/Reports/docs/SST-2002Bulletin.pdf>

<http://cehd.umn.edu/CAREI/Reports/summary.html#SchoolStart>

<http://cehd.umn.edu/CAREI/Reports/docs/SST-1998VI.pdf>

<http://cehd.umn.edu/CAREI/Reports/docs/SST-1998VII.pdf>

Edina, MN:

<http://www.edina.k12.mn.us/news/reports/laterstart/summary.htm>

Arlington, VA:

Impact of 2001 Adjustments to High School and Middle School Start Times (June 2005)

<http://www2.apsva.us/1540108292149610/lib/1540108292149610/report0605.pdf>

Advisory Council on Instruction High School Start Time Study Committee Report

(Dec 1999):

http://www2.apsva.us/1540108292149610/lib/1540108292149610/hs_start_time_report.pdf

Wilton, CN: (NSF Case study, League of Women Voters of Connecticut Concurrence Study)

http://www.sleepfoundation.org/site/c.huIXKjM0IxF/b.2511905/k.80A2/Changing_School_Start_Times_Wilton_Connecticut.htm

<http://serv01.siteground126.com/~wiltonlw/images/stories/MiscPDFs/lwvctconcurrence.pdf>

Fayette, KY:

http://www.sleepfoundation.org/site/c.huIXKjM0IxF/b.2511919/k.E074/Changing_School_Start_Times_Fayette_County_Kentucky.htm

Jessamine, KY:

http://www.sleepfoundation.org/site/c.huIXKjM0IxF/b.2511911/k.DCEB/Changing_School_Start_Times_Jessamine_County_Kentucky.htm

Minnesota:

<http://cehd.umn.edu/CAREI/Reports/docs/SST-1998VII.rtf>

*Table 1: Districts and Start Times

<http://cehd.umn.edu/CAREI/Reports/docs/SST-1998VII.rtf>

Items/Scales from Sleep Survey	District A 8:30am	District B 7:25am	District C 7:15am	All 17 School Districts
School Day Rise Time	7:06am ¹	6:08am ²	5:58am ³	6:11 am
School Night Bedtime	11:21pm ¹	11:20pm ¹	11:09pm ¹	11:08 pm
School Night Sleep Total	7 hrs, 46 min ¹	6 hrs, 47 min ²	6 hrs, 48 min ²	7 hrs, 2 min
Daytime Sleepiness	2.101	2.452	2.973	2.50
Sleepiness Scale (#43)	14.861	15.861	17.742	16.56
Struggled to stay awake or fallen asleep (school related items from #43):				
reading, studying, doing homework	1.951	2.121	2.612	2.23
during a test	1.211	1.341	1.572	1.44
in a class at school	1.981	2.24 ^{ns}	2.482	2.38
while doing work on a computer or typewriter	1.171	1.32 ^{ns}	1.422	1.31
Sleep Behavior Scale (#45)	19.191	21.022	22.843	21.71
In the last two weeks, how often have you (#46):				
arrived late to class because you overslept	1.491	1.912	2.022	1.71
fallen asleep in a morning class	1.571	1.952	2.012	2.02
fallen asleep in an afternoon class	1.451	1.70 ^{ns}	1.852	1.84
Depression Scale (#46)	9.961	10.431	11.432	10.59
Days Home Sick Over 2-weeks (#21)	0.281	0.421	0.471	0.40

Table 4: Comparison of Three Demographically Similar High Schools (grades 10-12):

District A: 8:30 am start time

District B: 7:25 am start time

District C: 7:15 am start time

Hours of organized sports during the week similar:

A: 3 hours/16 minutes

B: 4 hours/14

C: 3 hours/10 minutes

Hours of extracurriculars during school week similar:

A: 2 hrs/44 minutes

B: 1 hour/32 minutes

C: 2 hours/48 minutes

Note: Different superscript values indicate a statistically significant difference between row means at $p < .05$. "ns" superscripts indicate that this district's mean is not significantly different from the other two district means (e.g., for item "School Day Rise Time" each of the three means are significantly different from each other; for the sub-item "struggled to stay awake in class at school" District B was not significantly different from either District A or C, but District A is significantly different from District C).