School Start Times

An Evidence-Based Review
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“One of the biggest challenges school districts face is the need to inform community stakeholders (e.g., parents, teachers, and administrators, coaches, students, bus drivers, businesses that employ students…) about the scientific rationale underpinning the merits of delaying school start times; the threats to health, safety, and academic success posed by insufficient sleep; and the potential benefits for adolescents of school start time delay.”

(American Academy of Pediatrics, 2014 p. 646)
Agenda

- Context of HS start times in CCPS
- American Academy of Pediatrics' recommendations and rationale.
- Brookings Institute report on cost/benefit of changing start times
- Outcomes from other districts that have made this change
- Counter-arguments and barriers to change
- Ideas for addressing these barriers
Bus Routes in CCPS

For students attending their zoned schools pick-ups are very early: (average start 6:18am)

- Range from 6:00am for Midlothian HS to 6:40am for Meadowbrook HS

Specialty Centers

- Specialty Center Bus Pick-ups start as early as 5:40am
The Science Behind Later Start Times

• AAP Policy Statement on School Start Times--2014
  • Recommended start times of 8:30am or later for adolescents

• American Academy of Child and Adolescent Psychiatry concurred
  • called AAP recommendations “comprehensive and compelling”
  • CDC has recommended later start times since 2008
The Science Behind Later Start Times

• Pubertal changes are linked to alterations in the circadian rhythm that make it hard for adolescents to fall asleep earlier.
  • They don’t feel the need to sleep until ~11pm
  • “Melatonin levels peak at roughly 7:00 am for adolescents and at 4:00 am for adults, so waking a teenager at 7:00 am is similar to waking an adult at 4:00 am”*
  • Everyone needs good sleep habits, but this issue goes far beyond sleep habits or “good parenting.”

(Brookings, p. 8).
Negative **Academic Consequences of Sleep Deprivation in Adolescents**

- Cognitive deficits, especially with more complex tasks
- Executive functioning deficits (working memory, organization, time management, sustained effort)
- Impairments in attention
- Deficits in abstract thinking, verbal creativity
- Decreased performance efficiency and output
- Lower academic achievement
- Poorer school attendance and higher dropout rates
- Lower motivation
Other Negative Consequences of Sleep Deprivation in Adolescents

**Physical Health**
- Metabolic dysfunction/increased Type 2 diabetes, obesity risk
- Cardiovascular issues (hypertension)
- Skip breakfast; less physical activity
- Adolescent athletes who slept <8 hrs./night more likely to be injured

**Mental Health**
- Increased vulnerability to stress & emotional dysregulation
- Higher *nonmedical use of stimulant meds* and caffeine
- Poor impulse control & *increased risk-taking behaviors*
- Increased risk of depression, anxiety & suicidal ideation
Car Accidents and Drowsy Teen Drivers

Higher rates of car accidents in districts where HS starts earlier

- Study conducted in VA Beach (HS start time: 7:20) and Chesapeake (HS start time: 8:40) found teen accident rates were significantly higher in VA Beach.
- Study recently replicated in Chesterfield and Henrico.
- Nationally, in counties where school times were shifted accident rates dropped significantly.
Why Focus on Start Times?

- “The evidence strongly implicates earlier school start times (i.e., before 8:30am) as a key modifiable contributor to insufficient sleep, as well as circadian rhythm disruption, in this population.”*

- Differences in academic and health outcomes are found between schools with as little as a 30 minute difference in start times.

- 34% of students get 8 hours of sleep when school starts at 7:30 am compared with 66% in schools that start as late as 8:55 am

AAP (2014); Wahlstrom et al. 2014; CNMC report, 2014
• Changing school start times offers a big “Bang for your buck.”

• Early school start times reduce performance among disadvantaged students by an amount equivalent to having a highly ineffective teacher.”*

• Moving middle and HS start times later is associated with test score gains and an increase of $17,500 in lifetime earnings/student.

(Brookings Institute, 2011, p. 5)
Effects are Greatest for Most At-Risk Students

- Among middle school students moving start times later was linked with 3% increases in math & reading scores among average students.
- These increases were nearly doubled among the lowest-performing students.
- For all students, these score increases are equivalent to those achieved if class size were decreased by 1/3.
- Changes persisted into HS.
Outcomes in Other Districts

• Decreased dropout rate, improved attendance & decreased tardiness
• A multi-state study found increases in HS students’ GPAs in math, English, Science and Social Studies.
• Multiple studies have identified test score improvements.
• **Car crash rates decreased** in districts that delayed start times.
Outcomes in Other Districts

- Decreases in sleepiness, depressed mood and substance use
- Increases in student motivation
- Teachers and administrators reported being more productive and rested
- Students watched 15 min. less of TV/day and spent 17 more min./day on homework
- Fewer disciplinary referrals
- Improved moods in teens (noted by parents)
# A Day in the Life of a High School Student

## Current Schedule

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>5:40 am</td>
<td>Wake</td>
</tr>
<tr>
<td>6:40 am – 7:10 am</td>
<td>Bus</td>
</tr>
<tr>
<td>7:20 am – 1:50 pm</td>
<td>School Day</td>
</tr>
<tr>
<td>1:50 pm – 2:20 pm</td>
<td>Bus</td>
</tr>
<tr>
<td>2:20- 8:30pm</td>
<td>“Free” time</td>
</tr>
<tr>
<td>8:40 pm</td>
<td>Bed time (recommended 9 hrs)</td>
</tr>
</tbody>
</table>

## Potential Revised Schedule

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:25 am</td>
<td>Wake</td>
</tr>
<tr>
<td>8:25 am - 9:05 am</td>
<td>Bus</td>
</tr>
<tr>
<td>9:15am – 3:45 pm</td>
<td>School Day</td>
</tr>
<tr>
<td>3:45 pm – 4:15 pm</td>
<td>Bus</td>
</tr>
<tr>
<td>4:15 pm – 10:25</td>
<td>“Free” time</td>
</tr>
<tr>
<td>10:25 pm</td>
<td>Bed time (recommended 9 hrs)</td>
</tr>
</tbody>
</table>
Alternative Views

• **Teens should just sleep later on weekends**
  • Worsens circadian rhythm disruption & makes it even harder to wake up early again on Monday (“jet lag.”)

• **They’ll need to get up early when they start working**
  • Not many jobs start at 7:20am and require commutes starting as early as 5:40am.
  • It’s developmentally inappropriate.
  • There are well-known negative health consequences of shift work.

• **They’ll just stay up later**
  • **Bedtimes do not shift later** and teens get significantly more sleep in districts where start times were pushed later for HS.

Wahlstrom et al.; startschoolalter.net
Alternative Views

• They won’t be able to participate in as many activities
  • Teens engage in equivalent amount of after-school activities when times are shifted.
  • Athletics were not adversely impacted in any of the districts that have made the shift; many districts found that more students participated and that their teams performed better.

• We’re just coddling them
  • Seat belts in back seats and eliminating second hand smoke are similar public health level interventions that were initially seen as excessive by some.

• Teens should just nap when they get home from school
  • Quality of sleep during napping is not equivalent to nighttime sleep.
What other Districts Have Done

• Of the 95 counties in Virginia, 72 start high schools at 8:00 am or later.

• The largest county in VA, Fairfax, voted to change HS starts for next year.*

• Arlington (2001) & Bedford (2013) VA*
• Charlottesville (changed 2014-2015)
• Roanoke City (2008)
How Other Districts Made the Change

• Decrease “passing time” between classes.
• Place study hall/free periods at end of day to facilitate participation in after-school activities
• Enhance home to school walkability
• Consider changes to PE, especially for student-athletes
• Federal funding is dependent on attendance; changing start times can increase attendance, thereby defraying costs associated with schedule adjustment.
How Other Districts Made the Change

• Pilot the change in one school/phase in change.
• Consolidate bus routes (e.g., middle & HS on same buses; consolidate under-utilized routes)
• “Rolling” or open transportation windows
• Denver PS added 2 hours to HS day and students pick their start/end times (between hours of 7:30-4:30)
• West Hartford, CT also offered a flexible start time for HS.
• Add online or optional early classes.
• “There is no ‘one size fits all’ plan”*

(CNMC Report, 2014, p. 15)
Conclusion

• Data are remarkably consistent in highlighting the negative academic, safety, & health risks of early school start times for adolescents.
• These data guided the recommendations made by the CDC, AAP and other major health organizations regarding school start times.
• Other districts have later HS start times, and offer models to follow.
• Early start times are a recent historical phenomenon, and reflect what is best for adults (e.g., work & athletic schedules, budgets, transportation). Later starts for adolescents are best for their academics and overall well-being.
Bus Routes in CCPS

• Start at **6:00am** for Midlothian HS
• Start at **6:05am** for Cosby HS
• Start at **6:07am** for Matoaca HS
• Start at **6:15am** for Manchester HS
• Start at **6:20am** for Thomas Dale HS
• Start at **6:25am** for Bird & James River HS
• Start at **6:30am** for Monacan & Clover Hill HS
• Start at **6:40am** for Meadowbrook HS