To: MNPS Community
From: Urban Leaders 2020 Education Policy Fellows: Austin Reid, Mary Gaegler, Jess Rinne
Subject: Moving MNPS High Schools Start Time to 8:30 AM
Date: July 2020

The purpose of this memorandum is to explain the benefits, challenges, and possible solutions for shifting the start time of high schools under Metro Nashville Public Schools (MNPS) from 7:05 AM to 8:30 AM. Nashville has one of the earliest start times in the country for high schools beginning 58 minutes before the national average start time of 8:03 a.m.[1] Far too often such an early start time results in sleep deprivation in teenagers. Sleep deprivation among teens can create an increased risk of poor academic performance, substance abuse, and other ill effects.[2] This memo will begin by providing a historical overview of high school start times in the United States.

I. A Historical Overview of High School Start Times

a. For most of the 20th Century, the school day for high schools in the U.S. began between 8:30 and 9:00 AM

As far back as 1913 medical and educational professionals recognized that sleep patterns for children and adolescents were different with adolescents less likely to spontaneously arise in the morning.[3]

In the 1960s most U.S. high schools started between 8:30 AM and 9:00 AM.[4] By the 1970s high schools began to shift their start times earlier, primarily due to administrative and financial reasons. Similarly, in the 21st century, financial reasons continue to be the primary motivator for districts that have high school start times before 8:30 AM rather than any perceived benefits to student welfare.[5] A growing appreciation of student health needs has in the past five years led an increasing number of school districts, including Seattle Public Schools, to move start times later.[6]

The topic of high school start times is not a new one in Nashville. As early as 2010, the district commissioned a survey asking parents, students, and staff to indicate their preference for a proposed schedule change that pushed high school start times back to 9:00 am. Not quite a majority, but a plurality of respondents to the survey administered in English, voted in favor of the change as evidenced in Figure A. The respondents to the survey administered in Spanish were almost evenly split with only a 1.5% edge to the respondents voting "no." These results can be seen in Figure B. It is worth noting that the surveys asked different questions, which prevents us from being able to combine the responses. If a more updated survey is administered in MNPS in the future, it is recommended that

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[1] Anne Chaker, "The Earliest and Latest School Starts," *Wall Street Journal*, August 30, 2016, https://www.wsj.com/articles/the-earliest-and-latest-school-starts-1472576600.
[2] "Schools Start too Early," *Centers for Disease Control and Prevention*, July 30, 2018, https://www.cdc.gov/features/school-start-times/index.html.
[3] Adeline Hocking and Lewis Terman, "The Sleep of School Children," *Journal of Educational Psychology*, 2013, vol. 4, p 147, https://teensneedsleep.files.wordpress.com/2011/04/terman-and-hocking-part-3.pdf
[4] Diana Zuckerman, "Early Morning Classes, Sleepy Students, Risky Behaviors," *National Center for Health Research*, 2020, http://www.center4research.org/early-morning-classes-sleepy-students-risky-behaviors/.
[5] Amy Wolfson and Mary Carskadon, "A Survey of Factors Influencing High School Start Times," *National Association of Secondary School Principals Bulletin*, March 2005, vol. 89, p 58, https://teensneedsleep.files.wordpress.com/2011/03/wolfson-carskadon-a-survey-of-factors-of-influencing-high-school-start-times.pdf.
[6] James Urton, "Teens get More Sleep, Show Improved Grades and Attendance with Later School Start Time," *UW News*, December 12, 2018, https://www.washington.edu/news/2018/12/12/high-school-start-times-study/.

the same question is asked of all participants. A more complete breakdown of the survey responses is included in Appendix A.

Figure A: MNPS High School Start Time Survey Response (English)

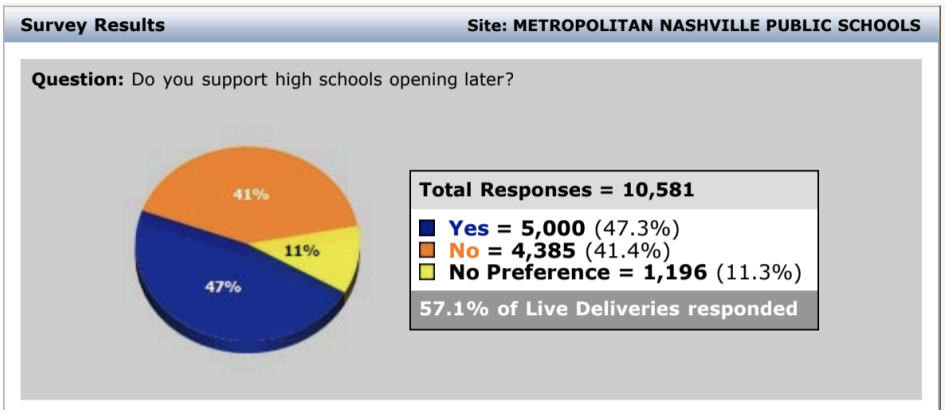
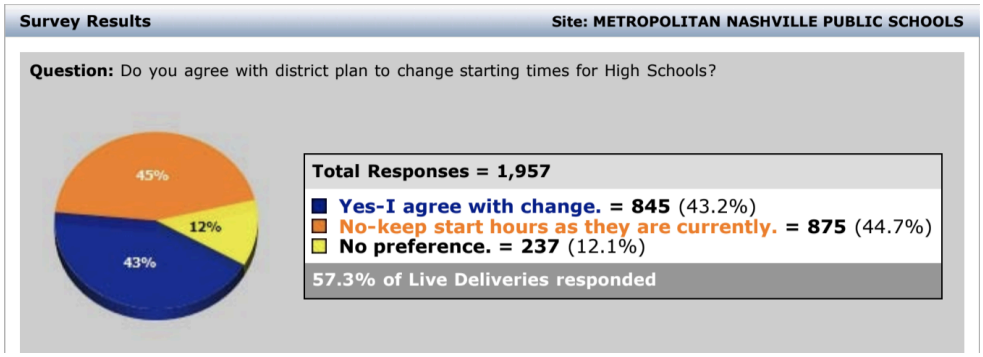


Figure B: MNPS High School Start Time Survey Response (Spanish)



In 2016 a group of parents concerned about the current 7:05 start time organized a petition that was submitted to the Metropolitan Nashville Board of Public Education School Board. This led to an inconclusive debate.[7] In 2018 the issue was again discussed by Board members without reaching a definitive resolution.[8]

b. Perceived health benefits played no role in the national shift to earlier high school start times.

The only health benefit to earlier high school start times that has been cited in the past is increased school bus safety. This has never been studied in a scientific manner. Further, no research has addressed the risks (e.g., driver drowsiness) of having children and adolescents transported during the early morning hours when bus drivers themselves may not be alert.[9]

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[7] Jason Gonzales, "Nashville High School Start Times to be studied," *Tennessean*, October 25, 2016, https://www.tennessean.com/story/news/education/2016/10/25/nashville-high-school-start-times-discussed/92722230

[8] Jason Gonzales, "Will Nashville Public Schools Change High School Start Times," *Tennessean*, December 30, 2018,https://www.tennessean.com/story/news/education/2018/12/27/nashville-public-schools-board-explore-school-start-time-change-later-start/2414108002/.

[9] Amy Wolfson and Mary Carskadon.

c. Legislation

The relationship between later school start times and student well-being and achievement is one with national attention including the introduction of the ZZZ's to A's Act to the United States Congress. While nothing has come of that bill yet, the state of California recently did pass legislation requiring high schools to begin classes no earlier than 8:30 AM. Schools there have three years to implement the necessary changes.[10]

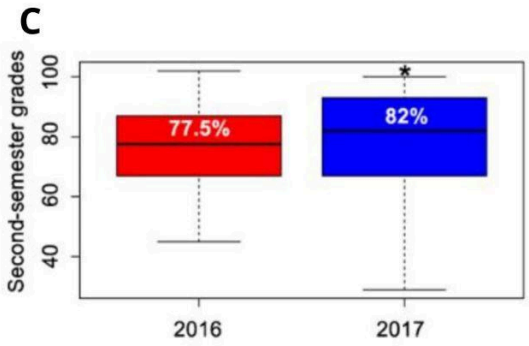
II. Benefits to Adopting An 8:30 AM High School Start Time

a. Academic

i. Research shows that moving high school start times to 8:30 AM or later could lead to significant improvements in academic performance and graduation rates.

A study by Kyla Wahlstrom finds "significant increases in grade point average in *all* 1st-period core courses for *all* semesters in *all* grades in Jackson Hole High School in Wyoming, with a start time of 8:55 a.m."[11]

Figure C shows the Sleepmore in Seattle Study found that second semester grades in high school sophomores at two different high schools improved by 4.5 % between the 7:50am start time in 2016 and the 8:45am start time in 2017.[12]



Jennifer Heissel and Samuel Norris performed a study in high schools and found that by delaying school start times one hour, math scores increased by 8 percent of a standard deviation, which can be compared to roughly three months of learning for a student.[13]

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[10] https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200SB328

[11] Kyla Wahlstrom, "Changing times: Findings from the first longitudinal study of later high school start times." *NASSP Bulletin,* December 2002, *86* (633), 3-21, https://files.eric.ed.gov/fulltext/ED596205.pdf.

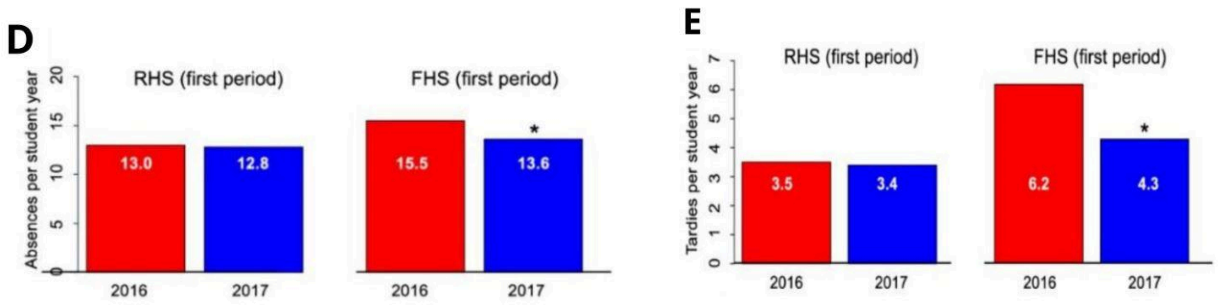
[12] Gideon Dunster, Luciano de la Iglesia, Miriam Ben-Hamo, Claire Nave, Jason Fleisher, Satchidananda Panda and Horacio de la Iglesia, "Sleemore in Seattle: Later school start times are associated with more sleep and better performance in high school students" *Science Advances*, December 2018, 4, https://advances.sciencemag.org/content/4/12/eaau6200.

[13] Jennifer Heissel and Samuel Norris, "Rise and Shine."

ii. Later high school start times lead to fewer absences and tardies, a key component in increased academic performance and graduation rates.

In 2002, the first longitudinal study of later high school start times found that there were significant decreases in all grade 9-12 tardies in the school districts that started high school in the 8:35am to 8:55am time window. **One district in that category had a decrease of 66% in tardies.**[14]

Figures D and E of the Sleepmore in Seattle Study demonstrates that absences and tardies decreased at both Roosevelt High School (RHS) and Franklin High School (FHS). It is worth noting that FHS "has many more economically disadvantaged students (88%) and ethnic minorities (68%) than RHS (31% and 7%, respectively)."[15]



In another study, the average graduation rate in **29 high schools increased from 79% to 88%, and the average attendance rate improved from 90% to 94%.**[16]

b. Economic

i. If Tennessee shifted all its high school start times to 8:30 AM the state would reap an economic gain of 120 million dollars within two years.

The Tennessee economy stands to gain millions of dollars annually as a result of high schools starting the school day at 8:30 AM. This will occur because of projected increased graduation rates among students, higher college matriculation rates, and fewer car accidents. One additional hour of sleep is, on average, estimated to increase the probability of high school graduation by 13.3 percent and college attendance rate by 9.6 percent.[17] These positive effects impact the jobs that adolescents are able to obtain in the future and, in turn, have a direct effect on how much a particular person contributes toward the economy in future financial earnings. Nationally it is estimated that high school graduates earn $8,000 more annually than those who did not complete high school.[18] A 2011 study by

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[14] Kyla Wahlstrom, "Changing times: Findings from the first longitudinal study of later high school start times." *NASSP Bulletin,* December 2002, *86* (633), 3-21, https://files.eric.ed.gov/fulltext/ED596205.pdf.
[15] Gideon Dunster, Luciano de la Iglesia, Miriam Ben-Hamo, Claire Nave, Jason Fleisher, Satchidananda Panda and Horacio de la Iglesia, "Sleemore in Seattle: Later school start times are associated with more sleep and better performance in high school students" *Science Advances*, December 2018, 4, https://advances.sciencemag.org/content/4/12/eaau6200.
[16] Pamela McKeever and Linda Clark, "Delayed high school start times later than 8:30 AM and impact on graduation rates and attendance rates," *Journal of the National Sleep Foundation*, 2017, 3, 119-125, https://advances.sciencemag.org/content/4/12/eaau6200
[17] "Shifting School Start Times Could Contribute $83 Billion to U.S. Economy Within a Decade," *RAND Corporation*, August 30, 2017, https://www.rand.org/news/press/2017/08/30.html.
[18] "The High Cost of High School Dropouts: The Economic Case for Reducing the High School Dropout Rate," *The Alliance for Excellent Education*, 2015, https://all4ed.org/take-action/action-academy/the-economic-case-for-reducing-the-high-school-dropout-rate/.

Georgetown University concluded that those with a bachelor's degree earn on average $2.8 million more over a lifetime.[19]

Table 1[20] lists both the total amount gained by the Tennessee economy and the percent increase in Gross State Product (GSP) that would occur if all high school start times within the state were shifted to after 8:30 AM according to the RAND Corporation. The dollar figures arrived at in the RAND study are likely conservative, by the researchers' estimation. This is because the analysts only looked at academic performance and motor-vehicle fatality rates. They did not consider other factors associated with early school start times and insufficient sleep among teenagers, including mental health issues such as depression and physical health problems such as obesity. Note the total GSP calculation is based on the 2017 total of, **$345,949,800,000**.[21] Of this total, the Nashville-Davidson-Murfreesboro-Franklin Metropolitan Statistical Area in 2017 contributed **$124,550,942,000** to the GSP.[22] This is just over 36% of the state's GSP. It can be assumed that Nashville would, therefore, gain around **$43 million**, 36% of the state's total **$120 million** gain, from shifting high school start times to 8:30 AM within two years.

Table 1: Predicted cumulative economic gain by state ($ million GSP)

	Years after policy change									
	2 years		*5 years*		*10 years*		*15 years*		*20 years*	
State	**$**	**%**	**$**	**%**	**$**	**%**	**$**	**%**	**$**	**%**
Tennessee	120	0.04%	515	0.16%	1,219	0.39%	2,131	0.67%	3,122	0.99%

c. Public Health

i. The National Institute of Health recommends at least 9 hours of sleep for teenagers, but many students do not meet this nightly quota.

In *Your Guide to Healthy Sleep*, the NIH recommends at least 9 hours of sleep for teenagers.[23] Despite this clear recommendation, "studies have repeatedly shown that adolescents do not get enough sleep, especially during the week."[24] "By some estimates, only one in ten adolescents meet these recommendations on weeknights."[25] One study of a diverse sample of high school students in Virginia found that "only 3 percent of students reported getting that amount and 20 percent of participants indicated that they got five hours or less"[26] While school start times dictate the time at which students must rise, students stay up late for a variety of reasons including shifting adolescent circadian rhythms,

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[19] "The College Payoff," Georgetown University: Center on Education and the Workforce, 2011, p 1, https://1qyhoq479ufd3yna29x7ubin-wpengine.netdna-ssl.com/wp-content/uploads/collegepayoff-completed.pdf.
[20] Hafner, Marco, Martin Stepanek, and Wendy M. Troxel, Later school start times in the U.S.: An economic analysis. Santa Monica, CA: *RAND Corporation*, 2017, p 15, https://www.rand.org/pubs/research_reports/RR2109.html.
[21] U.S. Bureau of Economic Analysis, Total Gross Domestic Product for Tennessee [TNNGSP], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/TNNGSP, June 11, 2020.
[22] U.S. Bureau of Economic Analysis, Total Gross Domestic Product for Nashville-Davidson--Murfreesboro--Franklin, TN (MSA) [NGMP34980], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/NGMP34980, June 11, 2020.
[23] NIH, "Your Guide to Healthy Sleep," PDF file. August 2011, https://www.nhlbi.nih.gov/files/docs/public/sleep/healthy_sleep.pdf.
[24] Erin M. O'Brien & Jodi A. Mindell. "Sleep and Risk-Taking Behavior in Adolescents," *Behavioral Sleep Medicine*, 3:3, 113-133. 2005. DOI: 10.1207/s15402010bsm0303_1
[25] Minges KE, Redeker NS. "Delayed school start times and adolescent sleep: A systematic review of the experimental evidence," *Sleep Medicine Reviews*, 28:86-95. 2016 DOI:10.1016/j.smrv.2015.06.002
[26] Tori Rodriguez, "Teenagers Who Don't Get Enough Sleep at Higher Risk for Mental Health Problems," *Scientific American*, July 01, 2015. https://www.scientificamerican.com/article/teenagers-who-don-t-get-enough-sleep-at-higher-risk-for-mental-health-problems/

and "social pressures rooted in involuntary (e.g. staying awake to complete homework) or voluntary (e.g. engaging with social media) actions."[27]

ii. Lack of sleep is linked to a variety of physical and social-emotional maladies.

Studies show that sleep deprivation is associated with several health risks including being overweight, drinking alcohol, smoking tobacco, and using drugs.[28] Lack of sleep can also increase the risk of depression and anxiety. In a large study conducted in Virginia, "researchers determined that each hour of lost sleep was associated with a 38 percent increase in the odds of feeling sad and hopeless, a 42 percent increase in considering suicide, a 58 percent increase in suicide attempts and a 23 percent increase in substance abuse," even after controlling for spurious factors such as family status and income.[29]

iii. Lack of sleep is linked to an increased risk of car accidents.

Adolescents are among the highest risk groups for drowsy driving-related accidents.[30] In one Kentucky school district in which the high school start time was changed from 7:30 to 8:30 am, a corresponding study found "average crash rates for teen drivers in the study county in the 2 years after the change in school start time dropped 16.5%, compared with the 2 years prior to the change, whereas teen crash rates for the rest of the state increased 7.8% over the same time period."[31]

iv. Starting high school no earlier than 8:30 is a recommended solution to adolescents' lack of sleep and the negative effects associated with it.

In accordance with the abundance of research, The American Academy of Pediatrics, backed by the Centers for Disease Control and Prevention, recommends starting high school no earlier than 8:30.[32][33] Dissenters may suggest that instead of changing school start times, adolescents should simply go to bed earlier, but research refutes the validity of this claim. Namely, "the hormonal influences of puberty tend to shift adolescents' biological clocks."[34] High school students "become sleepy later at night and need to sleep later in the morning" as a result of these shifts.[35] Another common concern is that students will simply stay up later once they know that school starts later. But on the contrary, schools that have implemented this intervention actually do show an increase in students' average sleep per night. In a systematic review of the literature on this topic, researchers found that when school start times were delayed 25 to 60 minutes, total sleep time was found to increase between 25 to 77 minutes

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[27] Minges KE, Redeker NS. "Delayed school start times and adolescent sleep: A systematic review of the experimental evidence," *Sleep Medicine Reviews*, 28:86-95. 2016 DOI:10.1016/j.smrv.2015.06.002.
[28] Center for Disease Control and Prevention. "Schools Start Too Early," July 30, 2018, https://www.cdc.gov/features/school-start-times/index.html#:~:text=One%20of%20the%20reasons%20adolescents,adolescents%20start%20school%20too%20early.
[29] Tori Rodriguez, "Teenagers Who Don't Get Enough Sleep at Higher Risk for Mental Health Problems," *Scientific American*, July 01, 2015. https://www.scientificamerican.com/article/teenagers-who-don-t-get-enough-sleep-at-higher-risk-for-mental-health-problems/
[30] S. Bin-Hasan, K. Rakesh, K. Kapur, J. Owens, "School Start time change and motor vehicles crashes in adolescent drivers," *Sleep Medicine*, Volume 64, Supplement 1, 2019, Pages S40-S41, ISSN 1389-9457, https://doi.org/10.1016/j.sleep.2019.11.113
[31] Danner, F., & Phillips, B, "Adolescent sleep, school start times, and teen motor vehicle crashes," *Journal of clinical sleep medicine. JCSM : official publication of the American Academy of Sleep Medicine*, *4*(6), 533–535. 2008
[32] Adolescent Sleep Working Group, Committee on Adolescence and Council on School Health Pediatrics September 2014, 134 (3) 642-649; DOI: https://doi.org/10.1542/peds.2014-1697
[33] Center for Disease Control and Prevention, "Schools Start Too Early," July 30, 2018, https://www.cdc.gov/features/school-start-times/index.html#:~:text=One%20of%20the%20reasons%20adolescents,adolescents%20start%20school%20too%20early.
[34] NIH, "Your Guide to Healthy Sleep," PDF file. August 2011. https://www.nhlbi.nih.gov/files/docs/public/sleep/healthy_sleep.pdf.
[35] Center for Disease Control and Prevention, "Schools Start Too Early," July 30, 2018, https://www.cdc.gov/features/school-start-times/index.html#:~:text=One%20of%20the%20reasons%20adolescents,adolescents%20start%20school%20too%20early.

per weeknight on average.[36] Pushing back high school start times is one policy lever that school officials can pull to directly affect the health and well-being of their students.

III. Challenges and Possible Solutions

a. Youth Employment Among High School Students and its Relationship to High School Start Times

In 2015, 34.3% of people aged 16 to 19 participated in the labor force nationally. This statistic includes those with full-time jobs, part-time jobs, and summer jobs. The percentage of teens in the labor force is down from 52% in 2000. Data is not currently available on adolescent workforce participation in Nashville or Tennessee specifically, so the existing national statistics have guided this section. The reasons for this decline in adolescent workforce participation are multifaceted and include higher enrollment levels in schools, increased numbers of teens participating in summer learning programs, and a greater percentage of people over the age of 55 staying in the labor force, which pushes out teens from some jobs.[37] By 2024 it is projected that only 26.4% of teens will be active in the labor force.[38]

Recognizing the academic needs of teens, the State of Tennessee has enacted laws that govern how long and when teens are able to work. Between the ages of 14 and 16 teens may only work three hours per day, 18 hours per week, and no later than 7:00 PM during the academic year. During the summer months, those between the ages of 14 and 16 can work 40 hours a week, but not after 9:00 PM. At 16 and 17 years of age, there are no hourly restrictions for teens, but they can not be required to work during school hours or after 10:00 PM on school nights. This later provision can be revised only if a parent signs a written permission slip allowing their child to work until midnight three days a week.[39]

While a minority of teenagers give their earnings directly to their parents, earnings from teens' part-time jobs help many families economically insofar as adolescent children are able to purchase themselves items that their parents would otherwise provide. Teens buy clothes, food, gas, and music; some save a portion of their earnings for larger purchases or even to attend college.[40]

i. Research has consistently shown that teens who work over 15 hours a week limit are negatively affected in a variety of ways[41]

A 2000 study published in the *American Educational Research Journal* found that students who worked between 1 and 15 hours a week were less likely to drop out of school than those who did not work at all. Students who worked more than 15 hours a week were more likely to drop out than those

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[36] Minges KE, Redeker NS, "Delayed school start times and adolescent sleep: A systematic review of the experimental evidence," *Sleep Medicine Reviews*, 28:86-95. 2016 DOI:10.1016/j.smrv.2015.06.002
[37] Teri Morisi, "Teens Trends," *U.S. Department of Labor*, March 09, 2017, https://blog.dol.gov/2017/03/09/teens-trends.
[38] Ibid.
[39] "Tennessee Wage and Hour Laws," *FindLaw*, December 07, 2018, https://statelaws.findlaw.com/tennessee-law/tennessee-wage-and-hour-laws.html#:~:text=Children%20can%20work%20starting%20at,pm%20when%20school%20is%20out.
[40] Jeylan Mortimer, "The Benefits and Risks of Adolescent Employment," *PubMed Central*, January 01, 2011, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2936460/.
[41] "Working More Than 20 Hours a Week is a Bad Idea for Teens," *National Consumers League*, April 2011, https://www.nclnet.org/working_more_than_20_hours_a_week_is_a_bad_idea_for_teens.

who did not work at all.[42] Thus we can conclude that the ideal number of working hours for high school students is between 1 and 15 hours a week.

ii. High school start times vary widely across the United States and local employers adjust to the realities of their local circumstances.

It was reported in a 2014 study conducted by the Center for Applied Research and Education Improvement at the University of Minnesota, which involved over 9,000 students spread across nine high schools in three states, that most jobs performed by teenagers do not begin until 4:00 PM or later. Thus most employment positions were unaffected by schools districts shifting to later school days which began after 8:30 AM.[43] If all high schools in Nashville shifted to an 8:30 AM start time, the school day would end at 3:30 PM.

Teenagers who live in communities that already start and end the school day later than MNPS still have after-school jobs. When given notice, employers will adjust to the new schedules of teen workers.

b. The Impact on High School Extracurricular Activities from Later Start Times

Extracurricular activities are an important part of many student's high school experiences. Coaches and other figures who help to organize these programs have successfully adjusted to later high school start times in school districts across the United States.[44] Within Tennessee there are a range of start times for the school day, with the average start time being 7:57 AM. In Anderson County all high schools shifted to a later start time between 8:50 and 9:00 AM in 2010.[45] Extracurricular activities adjusted to earlier start times that were implemented in the past and can adjust once more if students and other members of the community are given time to adjust.

There are also particular student health concerns that ought to be considered when thinking about student athletes.

i. Sleep deprived athletes are more likely to suffer sports-related injuries.

A 2014 study involving 160 student athletes at a middle/high school in Los Angeles found that sleep deprivation was the single best predictor of athletic injuries in adolescents.[46] Sleep deprivation causes student athletes to have dulled reaction times and a lack of alertness. An athlete who is not alert and who is more likely to be hurt will not be performing at their best.

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[42] John Robert Warren, Paul C. LePore and Robert D. Mare, "Employment during High School: Consequences for Students' Grades in Academic Courses," *American Educational Research Journal*, Vol. 37, No. 4, Winter, 2000.
[43] Kyla Wahlstrom, "Examining the Impact of Later High School Start Times on the Health and Academic Performance of High School Students," *University of Minnesota*, February 2014, https://www.spps.org/cms/lib010/MN01910242/Centricity/Domain/7352/final_version_3-11-14_start_time_report.pdf.
[44] "Success Stories," *Start School Later*, https://www.startschoollater.net/success-stories.html.
[45] Tara Bergfeld, "School Day Start Times," *Office of Research and Education Accountability*, April 2013, https://comptroller.tn.gov/content/dam/cot/orea/documents/orea-reports-2013/2013_OREA_SchoolStartTimes.pdf.
[46] Matthew D Milewski David L Skaggs, Gregory A Bishop, J Lee Pace, David A Ibrahim, Tishya A L Wren, Audrius Barzdukas, "Chronic Lack of Sleep Is Associated With Increased Sports Injuries in Adolescent Athletes," *Journal of Pediatric Orthopaedics*, March 2014, https://pubmed.ncbi.nlm.nih.gov/25028798/.

c. Transportation Costs and Logistics

Undoubtedly, one of the most complicated and expensive aspects of shifting high school start times later is in the area of transportation. The overall costs of transportation already make up a substantial part of any districts' budget. For MNPS, transportation costs were 38.8 million for FY 2018-2019 or 4.4% of the total budget.[47] Many other schools have led the charge in making this change and their experience provides insights for MNPS. Alternative bell schedules include flipped bell schedules, with the elementary schools starting in the earliest time slot and high schools starting in the latest; flat bell schedules with all schools starting at the same time; delayed bell schedules which push back all start times; or a possible creative alternative solution that redistributes current resources. All these options have unique benefits and drawbacks, but it is important to remember that the economic benefits gained from later high school start times are sure to outweigh even high start up costs for making the change.

IV. Examples from Other School Districts in the United States

Other school districts, some much larger than MNPS, face the same challenges as Nashville in changing high school start times: transportation, jobs and extracurricular activities, and caring for other family members. Yet, they have made the student-centered decision to begin high school at 8:30 AM or later for the academic, social-emotional and overall health benefit of teens.

Fairfax County, VA serves over 188,000 students and is the 10th largest school division in the United States.[48] After their school board approved the new school start times, school board member Sandy Evans said, "The fact that we are such a large district and we were able to make this change will be heartening for others in the country trying to do this as well. Up until now, we've had people saying it can't be done in such a large district — that there's too many moving parts. This shows that's not the case."[49]

a. Trimming Class Times to Accommodate Bus and After School Schedules

In a study at St. George's School in Middleton, Rhode Island, the starting times were moved from 8:00 to 8:30 AM and 5 to 10 minutes were trimmed from each class so that school would be completed in time for extracurricular activities to take place in a timely manner after school. "[Patricia] Moss [the academic dean] insists that the lost time was worth it because the students were so alert and productive during the day."[50]

b. Utilizing Task Forces and Grassroots Organizing to Aid in Overcoming Challenges of New Start Times

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[47] Fiscal Year 2018 - 2019 OPERATING BUDGET

[48] Fairfax County Public Schools, About Us, Fairfax County Public Schools Website, 2020, https://www.fcps.edu/about-fcps#:~:text=We%20serve%20a%20diverse%20student,12%2C%20speaking%20over%20200%20languages.

[49] T. Rees Shapiro and Ovetta Wiggins, "Later School Start Times in Fairfax Could Set a Trend as Experts Call for More Teen Sleep," Washington Post, October 24, 2014, https://www.washingtonpost.com/local/education/later-school-start-times-in-fairfax-could-set-trend-as-experts-call-for-more-teen-sleep/2014/10/24/421e7bc8-5ba1-11e4-b812-38518ae74c67_story.html

[50] Hannah Atkin, "Study: Students Benefit from Later Start to School Day." CBSNews. July 6, 2010, https://www.cbsnews.com/news/study-students-benefit-from-later-start-to-school-day/

The Seattle School Board created the Bell Time task force and spent two years to address the economic and logistical concerns. "The task force's report pointed out districts would likely save money on programs for disciplinary actions, school health clinics, counseling, and class failures. Students are less likely to need these programs when they get more sleep." [51]

"SLEEP (Start Later for Excellence in Education Proposal) is a grassroots effort to establish later start times for middle and high schools in Fairfax County, and their efforts were key in successfully changing start times for the district."[52]

c. Parent, Teacher and Student Input

In all surveys performed in Seattle WA, Des Moines IA and Barrington IL, the majority of students, teachers and faculty supported later start times. Trends from these surveys included a belief that: later high school start times will increase the amount of sleep in teens, students' academic performance would increase and students' overall well-being would improve if high schools started later in the morning. [53]

In preparation for this memo, input from a variety of stakeholders in the Nashville area and other school districts was collected including parents, educators, and central office staff.

V. In Conclusion

A high school start time of 8:30 or later has numerous academic, economic, and public health benefits. Students are better able to focus when their daily schedule coincides with their changing adolescent biological clocks. When students get adequate sleep, they are less prone to physical and emotional ailments, and their probability of improved academic performance, graduation rates and college attendance is higher. The school system benefits from increased funding linked to Average Daily Attendance, and less time and money spent on discipline and remediation. Lastly, the community at large benefits from a stronger economy fueled by students' higher lifetime earnings, and safer roads from less drowsy drivers. While there are admittedly some barriers to consider, such as transportation costs and after school activities, when making this change locally at MNPS, a full cost benefit analysis clearly shows that the pros outweigh the cons. We recommend that a task force is assembled with the goal of implementing later high school start times for MNPS students in the next two to three years. A sample implementation plan is included in Appendix B.

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[51] Casey Andersen, "Here's What Happens When School Starts Later," *National Education Association*, February 27, 2019, http://neatoday.org/2019/02/27/what-happens-when-schools-start-later/

[52] Phyllis Payne and Sandy Evans, "SLEEP FAQ," Start Later for Excellence in Education Proposal, Accessed on June 18, 2020, https://www.sleepinfairfax.org/faq.htm#1998_task_force_alt

[53] Catherine Darley, ND and Maida Lynn Chen, MD, "Seattle Public Schools: Can the "big city" do it?" Adolescent Sleep Health, and School Start Times, April 2016, https://docs.google.com/presentation/d/1auN_APyFE_F8_dCBcOe_NwP62QyHpVAONzav-A3VLNw/edit#slide=id.p1

Appendix A: 2010 MNPS Survey Results

February 18, 2010

High School Start Time Survey Results (sent Feb. 4):

English - 29,326 Successful Deliveries (37,638 unique deliveries selected)
10,581 responses - 57.1% of Live Deliveries responded

- 5,000 Yes (47.3%)
- 4,385 No (41.4%)
- 1,196 No preference (11.3%)

Staff Responses

- 500 Yes
- 604 No
- 172 No Preference

Faculty Responses

- 957 Yes
- 654 No
- 213 No Preference

Student Responses

- 4,790 Yes
- 4,397 No
- 1,069 No Preference

Spanish – 5,403 Successful Deliveries (7,177 unique deliveries selected)
1,957 responses – 57.3% of Live Deliveries responded

- 845 Yes (43.2%)
- 875 No (44.7%)
- 237 No Preference (12.1%)

Appendix B: Sample Implementation Plan

Research

- In Summer 2020, the Urban Leaders Fellowship did extensive research and created a policy memo describing the benefits of later high school start times for students.
- The Urban Leaders Fellows and Gini Pupo-Walker held an open forum for the MNPS community about their research on the benefits of later school start times for teens. The forum also included break-out rooms in which community members were able to discuss opinions and concerns. The forum was held on July 21, 2020 and is recorded for reference later, if necessary.

Outreach, Education and Advocacy

- We recommend continuing these outreach, education and advocacy efforts that began in the forum. The Urban Leaders Fellows created an educational handout for distribution.
- We also recommend doing several more presentations and/or distributing the recorded forum (from July 21st, 2020) for additional education efforts.
- After ample educational efforts about the effectiveness of this change, we recommend distributing a survey to all MNPS community to determine if a change in school start times is desired.

Task Force

- If the time change is desired by the MNPS community, we recommend the School Board create a Later School Start Time Task Force
- Task Force could include:
    - Health Professionals: Sleep Professionals/Researchers, Nurses Associations, Mental Health Professionals, Physicians
    - Administration/Central Office Staff: Logistics/Operations Department, Athletics Director, Special Education Department
    - Community Advocacy Organizations: Urban League of Middle Tennessee, Oasis Center, Conexion Americas, Walk Bike Nashville's Safe Routes to Schools Manager, Gear Up, My Brother's Keeper, Gideon's Army, NOAH
    - Parents and Families: PTO's, Start Schools Later Nashville (SSL)
    - Schools and School Stakeholders: Teachers, School Counselor(s), Principal(s), After-school Programming Directors, Teacher's Union(s)
    - Transportation Agencies: WeGo Scheduling Manager, Transportation Logistics Experts
- Questions for the Task Force to Consider:
    - How will this change affect the MNPS bus system? What creative alternatives can be made to go from a 3-tier bus system to a 1 or 2-tier bus system?
        - Consider the current logistics of MNPS transportation and the impact of WeGo, Nashville Public Transportation Agency, ridership with new school start times.
        - Also, we recommend bringing in an outside logistics professional to reconfigure the district's transportation system. We recommend reaching out to the Logistics

and Supply Chain Management Departments at UTK, MTSU and/or Volunteer State Community College.

- What will the change cost? How will MNPS get the funding? We recommend a cost/benefit analysis - see economic benefits section (II, b) in above memo.
  - Consider alternative funding options, such as using transportation funds and/or safety funds from Metro Budget for the change. Search for grants from TDOT or TDOE to provide additional funding for this change.
- How will this impact athletics (within the district and with surrounding districts)?
  - Consider lighting on outdoor fields and/or the sharing of certain sports fields.
  - Consider parents' ability to pick up students after practices, etc.
- Are there any creative solutions to after school programming and/or after school care for students with new start/end times?
- When would we like this change to happen?
  - Consider timing with the Metro Nashville City Budget. The Task Force should be advocating for additional money in the city budget in the beginning of the year in which they want this change to happen.