**Thesis:** Despite potential obstacles, high schools should start no earlier than 8:30 a.m. because a bell schedule aligned with teenage sleep patterns would benefit students in the areas in areas of academics, health, and safety.

1. **Educators and researchers now have a better understanding of teenager’s sleep cycles.**
	1. There is an increasing concern about teenage sleep deprivation.
		1. Assistant Superintendent Jodie McClay was initially surprised when parents and students began complaining that the district’s start time of 7:30 a.m. was too early. At first she recommended students should just go to bed earlier, but then Mcclay learned more about the topic of “sleep phase delay” which affects some teenagers. Hormones change sleep patterns making it biologically difficult from some students to go to bed before 11 p.m. or wake up before 8 a.m. (Sifferlin, 2016).
		2. Of course, Temecula is not the only town with sleepy teenage students. The National Institute of Health recommends teens get at least nine hours of sleep, but less than ten percent reach that benchmark. Alarmingly, 20 percent of those surveyed were getting less than five hours of sleep (Gregoire, 2015).
	2. There are biological reasons for the teenage sleep cycle.
		1. The latest research suggests higher levels of growth hormone during puberty are largely responsible for the odd sleep patterns of teenagers. Growth hormones block melatonin, another hormone responsible for making people feel drowsy. Additionally, teenage growth hormones are often at peak levels around midnight (Bianchi, 2016).
		2. Dr. Robert Verona of the Eastern Virginia Medical School reiterates, "Teenagers need over nine hours sleep a night, and...a large number of teens don't get sufficient sleep ... part of that relates to the time that high schools begin" (Holohan, 2016, para. 3).
2. **Sleep deprivation negatively impacts teen learning, health, and traffic safety.**
	1. Sleep deprivation negatively impacts learning.
		1. Sifferlin states studies show that teenagers who get the recommended nine hours of sleep are likely to score higher on tests and behave better in school (2016).
		2. A well-known Berkeley study proved that students who “go to bed after 11:30 on weeknights...perform worse at school and experience greater emotional distress.” Other studies link these academic and emotional struggles to “inattentive, impulsive, hyperactive, and oppositional behavior” (Gregoire, 2015, para 11).
	2. Sleep deprivation negatively impacts physical and mental health.
		1. Sifferlin also notes a strong link between sleep deprivation and an increased risk of health issues including obesity and depression (2016).
		2. Sleeplessness causes problems with blood sugar regulation which can lead to diabetes or obesity during one’s teenage years as well as increase risks for both afflictions later in life (Gregoire, 2015).
		3. *The Journal of Youth and Adolescence* found that every hour of lost sleep increased a teenager’s risk of feelings of sadness or hopelessness by 38%. A 2010 study came found a similar link between losing a few hours of sleep and an increased risk of depression. Teens average six hours of sleep are three times as likely to suffer depression (Gregoire, 2015).
	3. Sleep deprivation can cause car accidents.
		1. Ellin Holohan cites a study of two neighboring Virginia towns with a “stark” difference between car accident rates among teenaged drivers. Researchers pointed to early start times in Virginia Beach as the main factor contributing to a higher rate of car crashes (2016).
		2. Driving while drowsy is dangerous at any age, but teen drivers are also inexperienced drivers which can compound the problems. Insurance rates are famously high for teenagers and high school parking lots notorious hot spots for car accidents.
3. **There is public support for later start times, but there are a number of obstacles.**
	1. American voters and politicians agree with later start times.
		1. In a 2002 poll 80% of Americans thought school should start no earlier than 8:00 a.m. each day (“School Start Time,” n.d.).
		2. With voter opinion so clearly in favor of school policy aligned with sleep science it is no wonder that over the last decade politicians such as California Representative Zoe Lofgren sponsored a federal bill cleverly nicknamed “ZZZ’s to A’s” which encouraged school districts to move start times to no earlier than 8:30 a.m. (“School Start Time,” n.d.).
		3. The movement has picked up so much steam that even some of the highest ranking government officials are on board. Arne Duncan, Secretary of Education, recently tweeted, "Common sense to improve student achievement that too few have implemented: let teens sleep more, start school later" (Bianchi, 2016, para 6).
	2. Yet, there are a number community concerns and other obstacles.
		1. The Sleep Foundation cites several commonly raised issues,“Administrators have to delay busing schedules. Coaches worry about scheduling practices and many parents rely on the current start times for reasons such as childcare or carpools” (“School Start Time,” n.d., para. 10).
		2. Denver’s East High school, the principal points out that 60% of students at the school play a sport and would have to miss afternoon classes for away games if school didn’t end until 4 P.M. And in Anne Arundel County, Maryland parents started a petition to protest the change citing the schedule change it would require for elementary age students and and the difficulties their parents would have finding day care providers (Sifferlin, 2016).
	3. Changing start times can be expensive without proper planning.
		1. Temecula’s High School’s superintendent was met with resistance from some parents, who thought that a later starting time for their teenagers would make it more difficult to get to work on time. Another obstacle was the massive cost of changing the bus schedule. The estimated 1 million dollar price tag was more than the school district was willing to pay (Sifferlin, 2016).
		2. However, Sifferlin points to Fairfax county schools in Virginia who found a way to delay the high school start time for an hour, after officials put a full decade of planning into making the change. The change involved compromise, cost-cutting in the bussing department, and a year of lead time for the community to prepare for the change (Sifferlin, 2016).

1. **Teenagers can take matters into their own hands.**
	1. Jilly Dos Santos changed the minds of her school board.
		1. Jilly Dos Santos, a seventeen year old student from Columbia, Missouri who became outaged when she learned of a proposal to move to an earlier start time, 7:20 a.m. She used social media to gain support for an online petition that soon had over 200 signatures.
		2. Dos Santos researched a vast number of ways sleep benefited well-rested students who were more alert, creative, better able to remember information, and achieved higher test scores. They also had lower anxiety and a decreased likelihood of suffering a sports-related injury.
		3. In the end Dos Santos’ work “paid off. The school board decided that instead of making Jilly's high school's start time earlier, they would adjust the bus schedule and make the start time even later, at 8:55 a.m. ‘I was really excited,’ she says. ‘It felt good to know that you can make a difference’” (Bianchi, 2016 para 19).
	2. Teenagers can get more sleep even with early start times.
		1. Dr. Carskadon of Brown University believes teens should be getting much more sleep on the weekends, and that school curriculums at all grade levels should promote healthy sleep habits (“School Start Time,” n.d.).
		2. They suggest teens establish a regular, relaxation routine in the hour before bedtime in which they avoid stimulation like bright lights, video games, action movies, or heavy studying. Other suggestions include limiting naps to less than an hour and avoiding all forms of caffeine--including soda and chocolate--after 4 p.m.(UCLA, n.d.).
		3. Teenagers may sleep a little later on weekends, but these experts suggest they wake no more than two hours later than usual to avoid disrupting their internal clocks (UCLA, n.d.).