



**Better Learning? Higher GPA?
Improved Retention? *Sleep On It!***

2018 WKU Student Success Summit
By 'DA BEAR
Ron A. Rhoades, JD, CFP®



The Making of a Successful Student




Do we desire greater improved grades, better long-term learning, better moods, less anxiety, and greater retention?



EARLIER CLASS START TIMES = LOWER GRADE POINTS

Start time of classes	Grade point: Higher or (Lower)
8:00 a.m.	(0.084)
9:00 a.m.	(0.047)
10:00 a.m.	(0.034)
11:00 a.m.	(0.019)
Noon	(0.030)
1:00	-----
2:00	0.036
3:00	0.005
4:00	0.203

Survey of liberal arts college students, for courses having multiple sections where students were randomly assigned to different sections. Controlling for different grading by professors.

Timothy M. Diette and Manu Raghav, Does the Early Bird Catch the Worm of a Lower GPA? Evidence from a Liberal Arts College. DePaul University Economics Working Papers Series 2016-01 (March 9, 2016)

MORE ON THE NEGATIVE EFFECTS OF EARLIER CLASS START TIMES

Researchers examined data from the United States Air Force Academy and found that the earlier students had to start classes, the worse they did in those classes. **The earlier students had their first class, the lower their achievement in all classes taken on that day.**

Carrell et al., 'As from Zzzz?': The Causal Effect of School Start Time on the Academic Achievement of Adolescents, American Economic Journal: Economic Policy 3 (August 2011): 62-81

SLEEP AFFECTS MOOD.
Mood affects academic function and health.

Sleep duration and quality have direct and indirect (via mood) effects on college students:

- Academic function
- Physical health
- Psychological health.

Findings underscore the importance of healthy sleep patterns for better adjustment in college years

Lau Wan, Cheung Hui Mok, The interplay between sleep and mood in predicting academic functioning, physical health and psychological health: a longitudinal study." (2006)

Sleep Deprivation = Impaired Memory, Increased Errors

- Impaired short-term memory (ineffective ENCODING)
- Impaired long-term memory (less "CONSOLIDATION")
- Impaired information processing (less "ABILITY TO RECALL" and less ability to make judgments)
- Increased number of errors

**Wake up early
is the new
Work all night**


How sleep & productivity are linked

Board of Innovation 

The Work Wellness Program Of The Future Will Track Your Sleep

- Aetna offers hundreds of dollars to employees as an incentive to sleep seven hours a night.
- Through IncentFit, Casper employees can earn a monthly maximum of \$130 for exercise and \$60 for sleep

Dr. James Maas, Sleep Expert, Advises Employers:



"The first question you should ask anyone interviewing for a job is how many hours a night do they sleep. If the answer is less than 7, move on to the next applicant."

Due primarily to insufficient sleep, employers lose an average of \$1,293 per year per employee in productivity.

Dr. Phillip Bale, M.D., Chair, WKU Board of Regents


**Jan. 3, 2018
Presentation to
WKU Men's
Basketball Team**



• ABOUT 13:18 TO 15:00

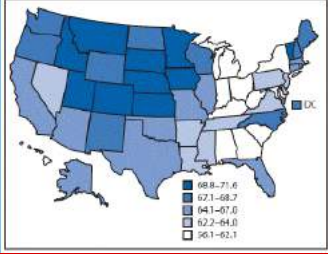
How Bad is the Problem?

- 50% of college students reported daytime sleepiness
- 70% reported insufficient sleep



Hershner and Chewin, Causes and Consequences of Sleepiness Among College Students. Nature and Science of Sleep 2014:6 73-84.

WORSE IN KENTUCKY?



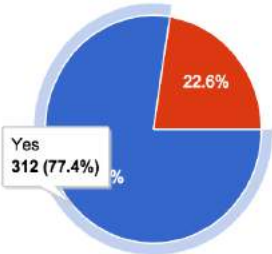
- Sleep durations vary across the United States. **Percent of adults reporting a healthy sleep duration.**
- From Liu et. al., CDC Morbidity and Mortality Report (2016)

ARE YOU ... Relative to Others Your Same Age?

- An Above-Average Driver?
- or
- A Below-Average Driver?



Are you safer than the average driver?



How Much Sleep Does the Average College Student Require?

- _____ 6 hours 15 minutes
- _____ 7 hours 15 minutes
- _____ 8 hours 15 minutes
- _____ 9 hours 15 minutes


Sleep Needs Vary Over the Life Cycle

Newborns/ Infants	0 - 2 months 2 - 12 months	10.5-18 hours 14-15 hours
Toddlers/ Children	12 - 18 months 18 months - 3 yrs. 3 - 5 yrs. 5 - 12 yrs.	13-15 hours 12-14 hours 11-13 hours 10-11 hours
Adolescents / Young Adults (ages 13-25)	On Average	9 hours, 15 minutes (at age 19)
Adults/Older Persons	On Average	7-9 hours

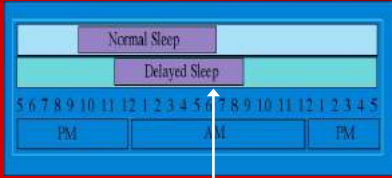
The average COLLEGE STUDENT RECEIVES significantly less sleep (6-7 hours). A 2 hour sleep debt each night!

Why are college students so sleep deprived ?

- The obvious:
 - Academic workload
- The less obvious:
 - Social activities, extracurricular activities, jobs
 - Computer / internet / TV / cell phones
 - Excessive caffeine use
 - Use of alcohol and/or recreational drugs
 - Delayed sleep phase
 - Irregular sleep wake schedules



THE BIG REASON: The Delayed Sleep Schedules of Young College Students



In order to get to classes on time, many students must wake early and shorten their sleep time.

Average time students get to sleep ... (UK, U. Louisville, U.Tenn.)

12:40 a.m.
ON WEEKDAYS



1:10 a.m.
ON WEEKENDS



WKU GFCB Nov. 2017 Survey – Freshmen (Residential Students Only)

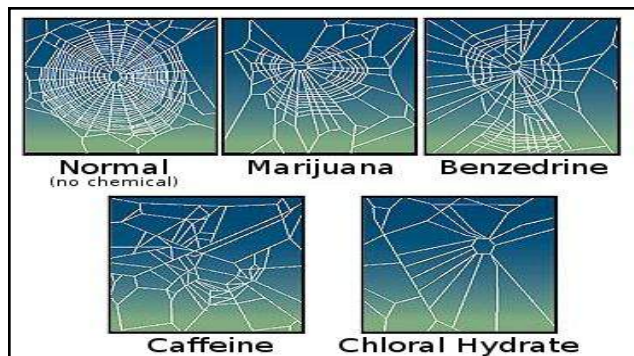
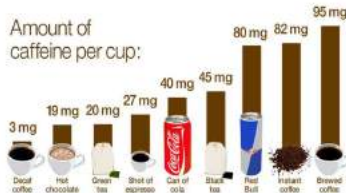
Self-Reported Time Student Went to Sleep	On-campus male Residents only, ages 18-21 only (N=57)	On-campus female Residents only, ages 18-21 only (N=30)
9:00pm	0.00%	2.04%
10:00pm	3.70%	12.24%
11:00pm	12.04%	18.37%
Midnight	37.96%	38.78%
1:00am	25.93%	16.23%
2:00am	17.59%	10.20%
3:00am	2.78%	0.00%
Other	0.00%	2.04%

STUDIES SHOW ...

If class start times are later ...


- Students get more sleep
- (They DON'T stay up even later)

CAN CAFFEINE OFFSET LOSS OF SLEEP?



Not Enough Sleep? More Viral Infections

- Sleeping less than 7 hours/night triples your risk of getting a cold!
- 7-9 hours of sleep is ideal for all adults, to recuperate from toxic exposure.
- Sleep deprivation reduces the immune function.
- Sleep-deprived students produce fewer flu virus-fighting cells.



AND ... MORE AUTO ACCIDENTS

“Operating on less than five hours of sleep, your risk of a car crash increases threefold. Get behind the wheel of a car when having slept just four hours or less the night before and you are 11.5 times more likely to be involved in a car accident.”

Walker, Matthew. *Why We Sleep: Unlocking the Power of Sleep and Dreams* (p. 138). Scribner. Kindle Edition.

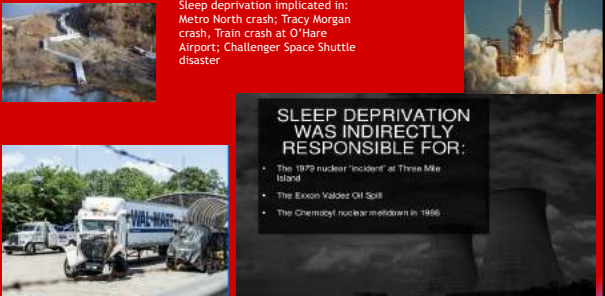
“VEHICLE ACCIDENTS CAUSED BY DROWSY DRIVING EXCEED THOSE CAUSED BY ALCOHOL AND DRUGS COMBINED.”

- Matthew Walker, *Id.*, p.140

DELAY CLASS START TIMES ... REDUCE AUTO ACCIDENTS

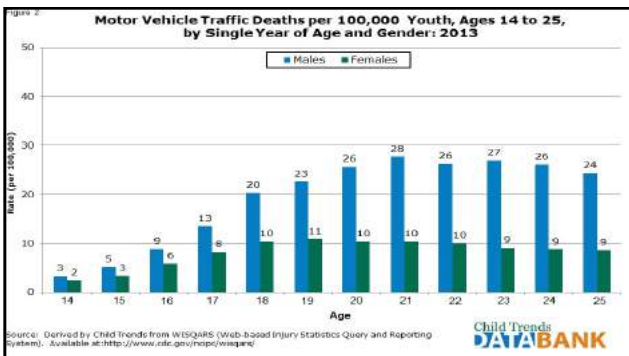
- University of Kentucky Study-1998
- Fayette County schools delayed starting times 1 hour for middle and high school students
- 2 years after the starting time changes were made, the study revealed a 16.5% reduction in student automobile accidents while at the same time there was a 7.8% statewide increase in teenage auto accidents
- Study also revealed a significant increase in student sleep time

Sleep deprivation implicated in:
 Metro North crash; Tracy Morgan crash; Train crash at O'Hare Airport; Challenger Space Shuttle disaster



SLEEP DEPRIVATION WAS INDIRECTLY RESPONSIBLE FOR:

- The 1979 nuclear "incident" at Three Mile Island
- The Exxon-Valdez Oil Spill
- The Chernobyl nuclear meltdown in 1986



Leading causes of death for college students ...

#1: AUTO ACCIDENTS



#2: SUICIDE and Depression



- Many people do not realize that sleep and depression are linked.
- One of the signs of depression is insomnia, also known as lack of sleep or inability to sleep.
- Insomnia can also play a role in the development of depression.
- Medication, sleep techniques and certain types of therapy can help those who have problems with sleep and depression.



“Late to bed, early to rise makes an adolescent sleepy, weepy, and unlikely to win the prize.”

- Phillip Bale, M.D.,
Chair, WKU Board of Regents

SLEEP STRATEGIES FOR INCREASED ... LEARNING, RETENTION, AND PERSISTENCE

- Sleep Education?
 - Important.
 - But: Mixed evidence as to effectiveness
- The “4-Night Sleep Challenge”
 - Long-lasting impact upon <5% of students

WHAT WE CAN DO.

- **Don't try to “fix” students natural circadian rhythms.**
- **Acknowledge the over two decades of research showing the lack of sleep, the detriments from lack of sleep, and the NEED to fix it.**

WHAT WE CAN DO.

- **Don't try to “fix” students natural circadian rhythms. *DON'T FIGHT NATURE.***
- **Acknowledge the over two decades of research showing the lack of sleep, the detriments from lack of sleep, and the NEED to fix it.**

Acknowledge That Our Response Has Been INADEQUATE TO DATE

- **“If the goal of education is to educate, and not risk lives in the process, then we are failing our children in the most spectacular manner with the current model of early school start times.”**
- **“Generation after generation, our young minds continue to remain unaware of the immediate dangers and protracted health impacts of insufficient sleep, and I for one feel that is wrong.”**

- Walker, Matthew. *Why We Sleep: Unlocking the Power of Sleep and Dreams* (p. 314). Scribner. Kindle Edition.

WHAT WE CAN DO.

- **Group residential students in dorms by sleep patterns (done)**
- **Undertake sleep assessments for holistic advisement purposes**
- **Schedule first class 9 hours or more after each students' usual bedtime**

LOOKING BACK ... at the Fall of 2017:

- 1,350 WKU students were enrolled in Level 100 Colonnade classes that started at 8:00 a.m. on either M/T/W/Th/F
 - (excluding labs)
- 1,636 WKU students were enrolled in Level 100 Colonnade classes that started at 9:00 a.m. on M/W/F
 - (excluding labs)

WHAT WE CAN DO ... FOR FALL 2018

- **Eliminate 8:00 a.m. classes**
 - Except when:
 - Multiple sections of classes
 - Clear demand for early start time
 - Labs (limited resources)
- **Reduce the number of 9:00 a.m. classes**
- **Schedule many, many more classes from 9:35 / 10:20 am and well into the afternoon hours**

WHAT WE CAN DO ... LATER

- **Establish a consistent start time for classes, for each and every day**
 - Example: For students with “normal” sleep schedules, start classes at 10:00 a.m.
- **Work with all WKU stakeholders on a plan to shift on-campus activities (sporting events, clubs, organizations, meal times, etc.) later**

REAL IMPACTS CAN BE SEEN ... IF WE ACT.

- GPA improvement
- Socialization improvements
- Physical health
- Mental health (reduced depression, anxiety, etc.)

GREATER RETENTION

WHAT CAN YOU DO ... NOW?

