American college student sleep is a major health disaster.

- Spring 2013 NCHA data reported:
  - 21.4% of students said sleep difficulties negatively affects their academic performance
  - 31% of student indicate sleep issues are academic impediments ranking second only to stress/anxiety
Teachers’ reports of pupils whose learning suffers from sleep deprivation.

The first year in college is associated with an abrupt shift in sleep schedule.

High School Data from 2006 Sleep in America Poll (n = 1,602)

Lund et al. 2010 J. Adolescent Health
Irregular schedules and all-nighters are rampant on campuses.

What are students saying about sleep?

- Zsarina Boncay: "@zarinaboncayyy: 2m
  @CollegeStudent: I just want to sleep I don’t want to do college anymore"

- Mëgim Bajraliu: "@MBajraliu: 4m
  First night in college with a full 8 hrs of sleep. Today has to be a good day."

- Brittany Fehre: "@brittanymfere: 4m
  4 hours of sleep 😴 #college"

- Larry Wentworth: "@LarryWentworth: 8m
  I got two and a half hours of sleep last night aka the college standard. Come to me Red Bull."
Stress
Psychiatric Illness Diagnosis
Excessive Sleepiness
Sleep Timing Problems
Academic Problems
(lower grades, dropped course, etc)

Infectious Illnesses

Stress

Excessive Sleepiness
Sleep Timing Problems
Infectious Illnesses
Academic Problems
(lower grades, dropped course, etc)

Prichard, SLEEP 2013
Annual Presentation
Entrainment of the Human Circadian Clock to the Natural Light-Dark Cycle
Current Biology, August 2013

Kenneth P. Wright Jr., Andrew W. McHill, Brian R. Birks, Brandon R. Griffin, Thomas Rusterholz, Evan D. Chinoy

Just one week of camping in a natural light environment advanced the circadian rhythm more than 2 hours.
Why We Developed an Environmental Scan for Sleep

**Rationale:** Environmental scans systematically survey and interpret relevant data to identify external opportunities and threats to a particular issue.

**Purpose:** to help college administrators identify areas of strength and growth in order to foster college environments that are conducive to good sleep.
Environmental scans have a long history of successful application in college health.

Development of the Sleep Scan

- A team of two health educators, faculty and two students met to discuss elements and aspects of campus that attribute or dismiss healthy sleep
- Categorized areas into eleven sections
- Developed a scoring system
- Invited ten campus to be part of the pilot project
- Distributed scan and compiled results
- Administered an evaluation assessment of the tool
Campus Profile

This section asks background questions about the institution's campus geography. Rural and urban campuses have distinct sleep challenges.

Scoring & Sections

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<th>Best Score</th>
<th>Percentage</th>
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</table>
I. Residence Housing

Includes questions pertaining to residence housing facilities (i.e. dorms, apartments, university affiliated housing), which are directed towards facilities, maintenance, or physical plant staff.

Residential Halls

- Data Highlight
  - 80% of dorms report non-dimmable hallway lights
  - 70% have no building-wide temperature reduction at night
Melanopsin is found in all vertebrate species, is expressed in 1–2% of retinal ganglion cells and project to sleep and circadian centers in the hypothalamus.
Light Timing impacts the circadian rhythm:
Evening light delays, and morning light advances, the melatonin and CBT rhythm.


Light wavelength impacts the circadian rhythm

Lighting Application for Non-Visual Effects of Light  Andreas Wojtysiak, Alfred Wacker and Dieter Lana, Osram AG
Time course of CBT during blue light (460 nm, ○), green light (550 nm, grey triangle, down), and dark condition (0 lux, black triangle) plotted from 2130 until 1030 the next morning. *P < 0.05; ΔP < 0.1, blue light vs. dark condition.

- Reduced SWA in first half of night
- Shortened REM sleep duration

Münch M et al. 2006;290:R1421-R1428

Light exposure at night impacts sleep and mood.
**Method**: Light monitoring and melatonin excretion (n = 516) Depressive symptoms were assessed using the Geriatric Depression Scale.

**Results**: The depressed group (n = 101) had significantly higher prevalence of LAN exposure (average intensity, ≥5 lx) adjusted for daytime light exposure, insomnia, hypertension, sleep duration, and physical activity [adjusted odds ratio(OR): 1.89]

Duration intensity ≥10lx, ≥30 min) was significantly more prevalent in the depressed group (adjusted OR: 1.71)

Obayashi et al. J. of Affective Disorders, June 2013
Day scenario with task lighting by warm white direct light and additional cool white light to the ceiling and upper wall.

Evening and night scenario with warm white task lighting only.

“Space station to get new insomnia-fighting light bulbs. NASA hopes to use science of light to reduce astronauts' dependency on drugs.”
White light is for general vision.

Cooler blue-shifted light promotes alertness (used during morning, during mid-sleep emergencies or schedule shifts).

Warmer red-shifted light triggers sleepiness.

LEDs have the additional bonus of being lighter, cooler, more durable, less toxic and more energy-efficient than fluorescents.

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Residential Halls Take Away

- Connect with Sustainability Committees and Physical Plant as new buildings are built and existing residence halls are retro-fitted.

- LED Lights are the Way to Go!
  Provide the best lighting uniformity of all exterior fixtures
  Offer the best and simplest light pattern adjustability
  Last up to four times longer than metal halide lights
  Most energy efficient
  Non-toxic and require no special disposal
II. Residence Policies

Inquires about the rules in place in student housing. These questions can be answered by residence life and students living in campus housing.

Napping Spaces: Vital for Sleepy Commuters

- Only 2 campuses had designated nap areas for commuters
Residential Policies

- Highlight

- 70% of roommate selection survey had very few questions about sleep; usually just asked circadian preference (without defining it)

- Enforced quiet hours were hard to measure
Residential Policies Take Away

- Work with Residence Life to improve roommate selection preference based on more specific sleep questions

- Consider adding a “healthy sleep” theme housing unit

III. Campus Facilities

Directed towards scheduling and campus life. For this section, knowledge of campus building hours is required. Friday and Saturday nights, as well as Saturday and Sunday mornings are considered weekend hours.
Campus Facilities

- Highlight
  - 80% of athletic facilities open at 8am on weekends but only 30% of libraries are open by 8am
  - 70% open libraries 10 am or later on weekend
  - On 40% of campuses, students cannot access weekend meals before 10 am

Students are forced into social jetlag by university building hours.
Circadian Temperature Rhythms in Structured vs. Unstructured Schedules

BN temperature rhythm over 6 days

BF temperature rhythm over 10 days

LE temperature rhythm over 10 days

SM temperature rhythm over 9 days
Campus Facilities Take Away

- Make sure dining facilities are open at normal hours on the weekend, at least for a reduced continental style breakfast.
- Think about what really needs to be opened 24 hours

IV. On-campus Sales

What products are sold in student stores and campus bookstores?
Campus stores aren’t stocking healthy sleep aids.

But campus stores are drugging students.

- 70% sell energy beverages on campus
- 60% sell energy nutritional supplements
- 40% sell caffeine pills
Imagine if campus stores stocked these instead…

Energy Drink Categories

<table>
<thead>
<tr>
<th>Beverages</th>
<th>Nutritional supplements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required to label contents.</td>
<td>Not required to label contents.</td>
</tr>
<tr>
<td>caffeine is limited limit 71 mg/per 12 fl ozs for a soda.</td>
<td>Ingredients are limited to “safe” levels</td>
</tr>
<tr>
<td>Can use food stamps to purchase</td>
<td>Burden of safety proof is on company</td>
</tr>
<tr>
<td>Burden of safety proof is on FDA</td>
<td>No age limit</td>
</tr>
<tr>
<td>Company doesn’t need to report adverse events.</td>
<td>Must report adverse events to the FDA.</td>
</tr>
</tbody>
</table>
58% of energy drink-related ED visits involved energy drinks only, and not other drug combos.

http://www.samhsa.gov/data/2k13/DAWN126/sr126-energy-drinks-use.htm

Energy Drink companies may be better at campus programming than you think.
Beware the “Student Brand Manager”

On Campus Sales Take Away

- Make a “better sleep” section of the campus store
- Have a conversation with purchasing department. Add more sleep hygiene materials like book lights, eye masks, room darkening shades, ear plugs, fans, lavender pillow spray.
- Ditch the drugs & nutritional supplements.
V. Vending Machine Sales

Contains questions that will be best answered by the purchasing department. These questions are about various sleep inhibiting or promoting items that are often sold in campus vending machines.

+ Vending Sales

- Data Highlight

- 80% can purchase energy beverage/supplements in vending machines

- 0% do regular health audits of vending machines.
Vending Sales Take Away

- Collaborate with Health Promotion Program or health courses to do a vending machine audit

- Connect with state's department of health. Many will do vending machine audits.

- If your campus has medical vending machine sales, eliminate sleep and stimulant OTC medications.

VI. Programming

Include questions about on-campus events sponsored by the university. Places like student affairs and campus life can be contacted to answer these questions.
+ Campus Programming

- Data Highlight
  - 60% rarely or never offer wind-down activities at night
  - 80% rarely or never offer morning jump start activities

+ Programming Take Away

- Lots of programming opportunities

- Wind Down Activities
  - Evening Yoga
  - Tea & Sympathy
  - Vespers
  - PJ Concerts
  - Mindfulness Based Stress Reduction

- Jump Start Activities
  - Walk & Talk with Campus VIPs
  - Morning Yoga
  - Free Breakfasts
  - Fun field trips
VII. Student Health

Questions that pertain to the on-campus clinic. If you don’t have a health center, please answer the following questions according to the primary location you refer students to for health.

Health Service

- **Highlight**
- Only 40% of campuses assess sleep during health history intake or clinical visits.
Health Service Take Away

- Add sleep questions to patient intake forms.
- Ask students to bring evidence of sleep times.
- Health Services is an easy point of access to educate student on healthy sleep.
- Consider offering Prescriptions for bedtimes and sleep times.

VIII. Accommodations

Questions about how those with sleep disorders are accommodated on your campus, and can best be answered by disability services and/or residence life.
Accommodations Take Away

- Educate staff and faculty about accommodations that are available for sleep disorders

IX. Assessment

The Assessment section’s questions are directed towards institutional affairs or student health. These questions refer to the presence of a general sleep assessment on campus.
Assessment

Data Highlight
- 70% campuses collect data on student sleep habits
- 40% have sleep self assessments like the Epworth Sleepiness Scale on their student health website

Assessment Take Away
- Important to collect data and connect it with Healthy Campus 2020 goals and objectives
- Having self-assessments about sleep on the Student Health website is also important.
The Academics section questions your campus’ ability to facilitate sleep for students through academic scheduling, academic advising, and homework deadlines.

**Data Highlight**

- 40% have facilitated study hours that run until 11 p.m. or later
- 0% of academic advisors are asking about sleep patterns when discussing academics
- 0% do not have an online deadline time requirement

**Blackboard**
Academics Takeaway

- Build relationships with faculty advising and faculty development office
- Consider adding providing a syllabus statement about sleep
- Consider suggesting that faculty limit online submission hours to before 10pm.

XI. Sleep Education

Sleep Education asks questions about which campus faculty and staff members receive training about sleep.
Sleep Education

Data Highlight

- 90% do not have academic counseling provide education on sleep
- 80% do not have peer educations trained to provide education on sleep
- 100% do not have faculty members receive about healthy student sleep

Sleep Education Take Away

Take Away

Most support services are not trained in sleep.
Scan Evaluation

- 3 hour average time to complete
- 6 of 10 campuses are actively working on sleep initiative
- 90% reported the scan easy to very easy to understand
- 70% reported it was somewhat easy to find the appropriate employee to ask the question of

Impact of Scan on Campus

- 75% reported the scan led them to rethink the sleeping environment of their campus to a great extent
- 26% reported they were likely to very likely adopt policy changes
- 51% Reported to likely to very likely adopt programming changes
- 0% reported like to very likely to adopt physical structural changes
+ Future Plans

- Recruit more schools for Fall 2014 Environmental Scan Pilot
- Spring 2015 Publish Scan and pilot survey results
- Sign up if you’re interested in being a Fall 2014 Pilot Site.

Questions?
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