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BTM-6000

Analysis plan

Background and Rationale/Unmet Need:

It has long been presumed that sleep is indeed a necessary, if not beneficial, component of life. It’s conservation throughout most “living” species and analogous states of rest and function observed in bacteria and plants, implies a basicity of sleep. The fields of neurology and psychology also converge on a notion that sleep is required for brain development and repair, a necessity for memory formation and learning. Physiologically, the short-term effect of sleep deprivation is obvious to anyone who has “pulled all nighters”. In an ecosystem no longer governed by sidereal systems, rather revolved around cardician rhythm beating to the bells of phone notifications, it is increasingly apparent the effect sleep and stress have the ones physical and mental health. Using the NHANES dataset we can directly compare hours slept and trouble sleeping to health metrics such as BMI, Blood pressure and depression. Separately, we can focus on the effect stressors such as low economic capital, drug and alcohol abuse, or pregnancy have on mental and physical health. Furthermore, we can hone in on our hypothesis by formulating a sleep-due-to-stress factor, which aggregates high-stress/low-sleep participants and compares there health to low-stress/high-sleep participants.

Study Aims:

Primary: How does trouble sleeping, or depleted hours slept affect patient’s health.

Secondary: How does trouble sleeping effect health when compared to other stresses.

Study Hypotheses?

Primary outcome: low-sleep participants perform worse in health metrics then low-sleep participants.

Secondary Outcome: high-stress participants perform worse in health metrics then high-stress participants and high-stress/low-sleep participants perform worse in health metrics then low-stress/high-sleep.

Data Extraction and Analysis Plan:

Study Cohort Definitions:

1. sleep: This group would use self reported sleeping trouble and hours slept to determine in they are in a low-sleep or high-sleep category.
2. Health: Patients self-reported health, BMI and BP can be used to scan for physical health while depression, interest and self-reported bad days can be used to scan for mental health.
3. Stress: high stress will be aggregated from those with low economic capitol, those going through big life events like pregnancy and those struggling with alcohol or drug use.

Analyses to perform:

1. Creation of sleep factor to split participants by. Then compare the health of low-sleep and high-sleep group by first comparing BMI, BP and self reported health separately and then as a combined metric if possible.
2. Compare health of high stress group to low-stress group.
3. Compare health of high-stress/low-sleep to high-stress/low-sleep participants.
4. Implementation of Logistic regression to test classification.