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QBS 126 Dataset Description

Wearable data is increasingly being seen as an invaluable piece of information as it has been useful for researchers to track participants easily and increase access to measurable data. Such a research field that has benefited from wearable technology and therefore its data is the sleep science field. Sleep studies are very beneficial in improving sleep patterns, learning more about the sleep cycles, and learning more about the brain while sleeping.

For our research project, we will use an existing, empirical dataset from the Queensland University of Technology Research Data Repository that observes Fourteen healthy adults (9 males, 5 females) recruited to wear Apple Watches and Actiwatches (Philips) on their non-dominant wrist for two consecutive nights. All wearable devices were then returned to extract the time, activity counts, sleep classification, and ENMO (the participants' movement during their sleep at home)

Note: One participant forgot to charge the Apple Watch so we lost one night of data and were left with 27 nights from 14 participants.

Here is the metadata for our dataset:
timestamp : date and time
Actiwatch activity counts : the activity counts of Actiwatch Spectrum
Actiware classification : the sleep classification 0= sleep, 1 = wake
Apple Watch ENMO: Euclidean Norm Minus One
Total number of people in the dataset: There are 14 participants involved with this study. Each csv is for each participant and the night (1 or 2) that the observations were recorded.
Number of observations per time-number of time points: For one night, there are 2453 observations as each observation was measured every 15 seconds.
Number of predictors: 2-timestamp, activity counts, actiware classification
Number of outcome variables in the dataset: ENMO

For this dataset we plan to answer the following research questions:
-How can we predict sleep states?
-Are there any individual differences in the relationship between activity counts and sleep duration?
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Here are the possible methods we plan to use to answer the previous questions
-VAR
- Cross Validation
-Factor Analysis/ Multilevel Factor Analysis
- Looking at the trajectories of each participant

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Marginalized models