NYSPI Biostatistics Seminar Series[1]

Quantifying patterns of circadian rhythm of activity measured with accelerometers in patients with mood disorders

Ciprian M. Crainiceanu, Ph.D.

Professor, Department of Biostatistics

John Hopkins University

Tuesday, February 4, 2013

3:00-4:00pm, New PI 6th Floor Multipurpose Room (6602)

Light refreshments provided

Abstract

Detailed activity can now be measured effectively using accelerometers in medium and large observational studies. This provides opportunities for quantification of movement at the minute and sub-minute level on hundreds or thousands of people, which may lead to better understanding of the differences between mood-disorder groups, better data collection designs, and new hypothesis about the activity of people who suffer of mood disorders. Motivated by an NIH study of people suffering from Bipolar 1 and 2, depression, and several other mood disorders, we discuss statistical approaches for quantifying the massive amount of data produced by such studies. From a Biostatistical perspective I will focus on modeling of the data as a continuous curve (acceleration summaries at the minute level) without collapsing over the course of the day and will emphasize the multilevel structure of the data (data are observed at multiple days for the same individual.) I will quantify and characterize the between-day and between-subject variability and will investigate what levels of variability are associated with mood disorders.

Biographical Note

My research is centered around Statistical methods for new technologies used in public health and medical studies. These technologies provide new types of data that are increasing both in size and complexity. I am interested in developing analytic tools that are tailored to specific applications, address the particular subtleties of the problem, and then find the common thread that eventually becomes Statistical methodology. My current scientific research interest centers around sleep research (EEG, polysomnograms), wearable computing (accelerometers, heart monitors), and multimodality brain imaging (SPECT, MRI, CT) with applications to Alzheimer,

[1] The PI Biostatistics Seminar Series is held on Tuesdays at New York State Psychiatric Institute. If you are interested in receiving regular announcements for our seminars in the future, or if you need further information, please contact Jina James (jamesji@nyspi.columbia.edu, (646) 774-7929).

Multiple Sclerosis, traumatic brain injury, and cancer. My statistical expertise centers around inferential methods for ultra high dimensional data, mixed effects modeling, Bayesian inference, and smoothing.