

Degree and Field of Study (2016):

SM Biostatistics

Organization	Project Abstract
Harvard T.H. Chan School of Public Health	<p>Limits of Mechanistic Models versus Machine Learning Models for Influenza Forecasting in the United States</p> <p>The Centers for Disease Control and Prevention (CDC) provides historical epidemiology / information on surveillance, tracking, and prediction of influenza in the United States (U.S.). / There is a need for this information, as well as improvements upon existing methodologies to / better serve public health and healthcare organizational needs around influenza. Digital disease / surveillance and alternative algorithms have been explored as additional ways by which to / accurately predict influenza activity in the U.S. In this paper, I present a comparison of utilizing / mechanistic models versus machine learning models and digital health data in forecasting / influenza activity in the U.S. at the regional level. Furthermore, I explore the benefits of / combining aspects of mechanistic models and machine learning models with digital health / information to improve forecasting influenza. My results indicate that there is benefit to / including an estimate from machine learning models in calibrating a mechanistic model for / forecasting up to three weeks into the future for the 20122013 influenza season in the Northeast / region of the U.S.</p>
MGH	<p>Collett's Model Selection Under Multiple Imputation For Multivariate Missing Data</p> <p>Collett's Model Selection Under Multiple Imputation For Multivariate Missing Data</p>
Harvard TH.CHAN School of Public Health	<p>Inverse Probability of Censoring Weighting Adjustment for Drop-Out and Partially Measured Covariates in an HIV study</p> <p>The Human Immunodeficiency Virus (HIV) can invade the human central nervous system and infect the brain after the initial infection. The relationship between neurocognitive ability decline and HIV infection becomes more and more interesting to researchers. One of the study aims of ALLRT study is to investigate the association between inflammatory biomarkers and neurocognitive impairment events in HIV infected patients. However, there are two issues that may lead to bias or impact the generalizability of the study results. One was dependent censoring and the other is partially measurement of covariates. In my practicum project, five sampling strategies incorporated</p>

with Inverse Probability of Censoring Weighting (IPCW) were applied to address these two issues. By comparing the performance of the five sampling strategies, I found the two best sampling methods are: 1) classified inverse probability weighted sampling and 2) classified simple random sampling. So these two sampling methods are recommended for selecting patients from the whole population for the measurement of their inflammatory biomarkers in the HIV-related clinical study (A5322).