

**Wednesday
March 13,
2019**

**12:30 pm
(CET)**

The **Working Group on Risk - CREAR**, with the support of the IDS dpt, Institut des Actuaire, LabEx MME-DII, and the group BFA (SFdS), has the pleasure to invite you to the seminar by:

Dr. Shaun SEAMAN
Cambridge University, UK

“Double Robust Methods for Missing Data”

*at ESSEC La Défense (CNIT) - Amphi 202, 12:30-1:30pm
and ESSEC Asia Pacific - Level 3, classroom 7, 7:30-8:30pm*

Most methods for handling incomplete data can be broadly classified as inverse probability weighting (IPW) strategies or imputation strategies. The former model the occurrence of incomplete data; The latter, the distribution of the missing variables given observed variables in each missingness pattern. Imputation strategies are typically more efficient, but they can involve extrapolation, which is difficult to diagnose and can lead to large bias.

Double robust (DR) methods combine the two approaches. They are typically more efficient than IPW and more robust to model misspecification than imputation. I shall give a formal introduction to DR estimation of the mean of a partially observed variable. Then, I shall move to some more general incomplete-data scenarios and review some strategies to improve the performance of DR estimators under model misspecification. Finally, I shall discuss the value of double robustness when using flexible data-adaptive methods for IPW or imputation.

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Modèles Mathématiques et Économiques de la
Dynamique, de l'incertitude et des Interactions



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Dr. Shaun SEAMAN

Cambridge University – UK

MRC | Biostatistics Unit

Shaun Seaman works on cross-cutting projects, such as general methods for handling selection bias caused by non-representative sampling. His main interest in recent times has been the treatment of missing data in observational studies, particularly in cohort studies. One major cause of missingness in cohort studies is attrition: individuals dropping out of the study. In addition, data are typically missing for some items even on individuals who remain in the study. The simplest approach to analysing data when some values are missing is to restrict the analysis to complete cases. However, it is known that this can lead to bias unless the data are missing completely at random. Multiple imputation (MI) and inverse probability weighting (IPW) are methods that give consistent estimation under the more general assumption that the data are missing at random. The former requires that the imputation model be correctly specified; the latter, that the missingness model (i.e. the model for the probability that an individual is a complete case) be correctly specified. The more recent, doubly robust methodology offers some protection against misspecified imputation or missingness models. Linear increments offers an alternative approach. He is interested particularly in the use of MI, IPW and linear increments for handling cohort data. The aim is to improve the way that missing data are handled. He's also interested in risk prediction and causal inference, and have a long-standing interest in HIV/AIDS epidemiology and injecting drug use epidemiology.

