Asgharian Masoud

The Department of Mathematics and Statistics, McGill University

Prevalent Cohort Studies: Length-Biased Sampling with Right Censoring

ΤΕΤΑΡΤΗ 22/4/2015
13:00

**ΑΙΘΟΥΣΑ 607, 6^{ος} ΟΡΟΦΟΣ,
ΚΤΙΡΙΟ ΜΕΤΑΠΤΥΧΙΑΚΩΝ ΣΠΟΥΔΩΝ
(ΕΥΕΛΠΙΔΩΝ & ΛΕΥΚΑΔΟΣ)**

ΠΕΡΙΛΗΨΗ (ΣΤΑ ΑΓΓΛΙΚΑ)

Logistic or other constraints often preclude the possibility of conducting incident cohort studies. A feasible alternative in such cases is to conduct a cross-sectional prevalent cohort study for which we recruit prevalent cases, that is, subjects who have already experienced the initiating event, say the onset of a disease. When the interest lies in estimating the lifespan between the initiating event and a terminating event, say death for instance, such subjects may be followed prospectively until the terminating event or loss to follow-up, whichever happens first. It is well known that prevalent cases have, on average, longer lifespans. As such, they do not form a representative random sample from the target population; they comprise a biased sample. If the initiating events are generated from a stationary Poisson process, the so-called stationarity assumption, this bias is called length bias. I present the basics of nonparametric inference using length-biased right censored failure time data. I'll then discuss some recent progress and current challenges. Our study is mainly motivated by challenges and questions raised in analyzing survival data collected on patients with dementia as part of a nationwide study in Canada, called the Canadian Study of Health and Aging (CSHA). I'll use these data throughout the talk to discuss and motivate our methodology and its applications.

AUEB STATISTICS SEMINAR SERIES - APRIL 2015

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13:00

**ROOM 607, 6th FLOOR,
POSTGRADUATE STUDIES BUILDING
(EVELPIDON & LEFKADOS)**

ABSTRACT

Logistic or other constraints often preclude the possibility of conducting incident cohort studies. A feasible alternative in such cases is to conduct a cross-sectional prevalent cohort study for which we recruit prevalent cases, that is, subjects who have already experienced the initiating event, say the onset of a disease. When the interest lies in estimating the lifespan between the initiating event and a terminating event, say death for instance, such subjects may be followed prospectively until the terminating event or loss to follow-up, whichever happens first. It is well known that prevalent cases have, on average, longer lifespans. As such, they do not form a representative random sample from the target population; they comprise a biased sample. If the initiating events are generated from a stationary Poisson process, the so-called stationarity assumption, this bias is called length bias. I present the basics of nonparametric inference using length-biased right censored failure time data. I'll then discuss some recent progress and current challenges. Our study is mainly motivated by challenges and questions raised in analyzing survival data collected on patients with dementia as part of a nationwide study in Canada, called the Canadian Study of Health and Aging (CSHA). I'll use these data throughout the talk to discuss and motivate our methodology and its applications.