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Linear regression with a randomly censored covariate: Application to an Alzheimer's study

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The association between maternal age of onset of dementia and beta-amyloid deposition (measured by *in vivo* PET imaging) of offspring is of interest to assess in a study of cognitively normal individuals over the age of 60. In a regression model for beta-amyloid, special methods are required due to the random right censoring of the covariate of maternal age of onset of dementia. The prior literature has proposed methods to address the problem of censoring due to assay limit of detection, but not random censoring. We propose imputation methods and a survival regression method that do not require parametric assumptions on the distribution of the censored covariate. In simulation studies, we compare these methods to the simple, but inefficient complete case analysis, and to threshold approaches. We apply the methods to the Alzheimer's study.

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The synergy of biometrics and adaptive technologies for smart world

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Biometrics is a technology that measures and analyses the biometric chemical, physiological or behavioral attributes of a person. In the last decade, biometrics research continued to introduce state-of-the-art algorithms to prove the concepts, and as industry keeps providing the associated devices, the world will continue to witness a rapid evolution in biometric industry. Biometrics modalities currently investigate identification patterns for fingerprint, iris scanning, reading heat signatures, facial recognition, use of DNA and vein. Using biometric patterns is mainly known in authentication or identification for security purposes. Yet, most current known biometric security systems use a unimodal biometric identification. As today's devices could easily be equipped with scanners, hence, those sensors will be able to verify our identities using multi biometric modalities in order to meet the high level of security. However, the commonly reported challenge in the biometric applications is the secure storage of the biometric data. Accordingly, multimodal biometric system is required to maintain secure data storage. As the world moves towards smart cities/environments, with the aid of emerging technologies, biometrics future daily applications would serve new purposes of use: human-human, human-devices interaction started to define. Among these are considered telecommunication, control applications, biometric-based tracking system, biometric based searching services, integrated biometric identification and surveillance systems. Economically, biometric indicators show that biometrics technologies would strongly exist in market shares. Biometric scientists forecast technology investors can think of commercialization of biometrics key drivers: services, devices, technologies. Commercialization of biometric drivers falls into one of the following categories: wearable authentication devices, and service provider interface, consumer devices interface and scanners. This, in turn, would identify biometrics future trends and applications. Key industries in the biometrics market over the next decade are likely to be finance, consumer devices, healthcare, and government, followed by enterprise applications, defense, education, law enforcement, and non-government organizations. In addition, biometrics future trends forecast gives thought to income level within a region, modality, device type, revenue.

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