CHAPTER 30

MATHEMATICAL SCIENCES
STATISTICS

Doctoral Theses

282. AGGARWAL (Priyanka)
      Contributions to Bayes Prediction Theory for Finite Populations.
      Supervisor : Prof. Ashok K. Bansal
      Th 15706

Abstract

Attempts to examine sensitivity of bayes predictor of the population means of a simple error-in-variable model by considering a class of moderately non-formal prior distributions. Derives the Bayes predictors of finite population means and regression coefficient under balanced loss functionas and examine loss robustness.

Contents

1. Introduction. 2. Bayes prediction of a finite population regression coefficient. 3. Bayes prediction of the mean of a stratified regression superpopulation. 4. Bayes prediction for prais-houthakker heteroscedastic regression superpopulation model - I. 5. Bayes prediction for prais-houthakker heteroscedastic regression superpopulation model - II. 6. Bayes prediction for an inverse gaussian regression superpopulation model. 7. Bayes prediction of one-parameter exponential family type population mean. 8. Robustness of bayes prediction under error-in-variables superpopulation model. 9. Bibliography.

283. BANERJEE (Tanushree)
      Assessment of Psychiatric Disorders, Clinical Classification Schemes and Survival of Indian Children With HIV Infection.
      Supervisor : Dr. Gurprit Grover
      Th 15707

Abstract

Undertakes exercises on certain problems pertaining to

psychiatric disorders in human immunodeficiency virus type 1 (HIV-1) infected children along with the estimation of survival function of doubly censored HIV-1 paediatrics data by using non parametric, semi-parametric techniques. The roles of some variables like HAART, sex, age and year of diagnosis in affecting the longevity of survival time have been investigated. Also attempts to evolve a clinical case definition (CCD) for the diagnosis of AIDS in areas in India where there are limited resources. The survivability of the HIV-1 infected children has been considered among the vertically transmitted group since mother-to-child transmission is the dominant mode of transmission of HIV in children. All programming and data analysis have been done by using SPSS software.

Contents

1. Introduction. 2. Estimation of hazard of HIV-1 infection of verticallytransmitted children by using parametric and semi-parametric survival models for doubly censored failure times and fixed covariates. 3. Behavioural disorders in 4-16 years old, HIV-infection indian children. 4. Evaluation of the World Health Organization (WHO) Clinical Case Definition (CCD) of acquired immunodeficiency syndrome (AIDS) for paediatric AIDS in the Indian context. 5. Effect of highly active antiretroviral therapy (HAART) use on survival and weight gain in HIV-1 infected children in India. 6. Estimation and comparison of survival time of antiretroviral (ARV) and non-ARV HIV-1-inected paediatric censored and interval censored data. 7. Future Research. 8. References.

284. MITAL (Neena)
Some Contributions to Robust and Reponse Surface designs.
Supervisors : Prof. M. L. Aggarwal and Dr. S. Roy Chowdhury
Th 15709

Abstract

Developed intraction graphs for asymmetric fractional factorial designs when one or two factors are at four levels and rests are at two levels. Studies the aconcept of maximum estimation capacity for 27-run and 81-run three-level combined array based on the number of eligible and clear estimable main effects and two factor interactions. Used moment aberretion projection designs given by Xu and Deng (2005) to develop second order surface designs involving 4, 5 and 6 quantitative factors and one qualitative factor.

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Contents

1. Introduction. 2. Interaction graphs for 4^r2^{n-p} fractional factorial designs. 3. Maximum estimation capacity for three level combined arrays. 4. Efficient response surface designs with quantitative and qualitative factors. 5. Efficient three level response surface designs eith quantitative and qualitative factors.6. Response surface designs involvinmg qualitative factors using moment aberration projections. 7. hidden projection properties of 4^12^n non-regular fractional designs. 8. blocked non-regular 24-run factorial designs. 9. Bibliography.

285. NEZHAT SHAKERI
On the Estimation of Incidence and Survival Function of Doubly Censored HIV Data Using Parametric and Non-Parametric Methods.
Supervisor : Dr. Gurprit Grover
Th 15708

Abstract

Studies exercises on certain problems pertaining to estimation of survival function doubly censored Iranian HIV+ data by using non-parametric and semi-parametric techniques. The role of some variables like mode of transmission, sex, age at time of HIV diagnosis and the year of infection in affecting the longevity of survival time have been investigated. Evolution of new techniques in the epidemiology of HIV and AIDS such as modified back projection of HIV incidence from HIV and AIDS diagnoses data by employing E-M algorithm technique and effect of correct incubation distribution for estimating a consistent result has been undertaken. It is believed that the proposed statistical models are suitable for predicting the incidence and natural survival time of HIV/AIDS patients in Iran and may also be extrapolated to other countries if ascertained appropriate to do so. All programming and data analysis have been done by using SPSS and R software.

Contents

1. Introduction. 2. Estimation of Incidence of HIV using modified back-projection method and a log-normal incubation distribution. 3. Survival trend in iranian patients with human immunodeficiency virus infection and variations according to age and mode of transmmission:a 14-year follow-up study. 4. Nonparametric estimation of survival function of HIV+ patients

with doubly censored data. 5. Estimation of survivorship function based on doubly censored data with application to HIV/AIDS. 6. Conclusion & further studies. 7. Bibliography.

M.Phil Dissertations

286. BHATT (Yogesh Chandra)
     Estimation of Stress-Strength Reliability for Some Lifetime Models : A Review.
     Supervisor : Dr. Ajit Chaturvedi

287. DEKA (Barnali)
     Modelling Binary Responses By Multiple Logistic Regression Using the Third National Family Health Survey Data.
     Supervisor : Dr. Gurpreet Grover

288. GHOSH (Sudeepta)
     Proportional Odds Model and Some of its Estimation Procedures : A Review
     Supervisor : Dr. Gurpreet Grover

289. GUPTA (Vinay Kumar)
     Semiparametric Regression Models for Censored Survival Data : A Review
     Supervisor : Dr. Gurpreet Grover

290. M. CH. PRIYA
     Scheffe's Canonical Polynomials with Designs and Analysis of Mixture Experiments : A Review.
     Supervisor : Dr. Poonam Singh

291. PANDEY (Kamal)
     Loss Functions in Bayesian Point Estimation : A Study.
     Supervisor : Prof. A. K. Bansal

292. RAGHY SWAMI
     Information Processing from Bayesian Perspective : A Study.
     Supervisor : Prof. Ashok Kumar Bansal