

広島統計談話会  
Hiroshima Statistics Study Group

第 228 回談話会を下記のように開催致しますので  
御参集下さいますよう御案内申し上げます。

You are cordially invited to the 228<sup>th</sup> meeting as scheduled below.

日 時 : 2006 年 6 月 2 日 (金) 15:00-

Date : June 2, 2006 (Fri) 15:00-

場 所 : 放射線影響研究所 講堂

Place: RERF Auditorium

演 者 : 富田 哲治 (広島大学原爆放射線医科学研究所計量生物研究分野助手)

Speaker: Tetsuji Tonda, Ph.D., Research Associate, Department of Environmetrics and Biometrics, Research Institute for Radiation Biology and Medicine, Hiroshima University

演 題 : 「都道府県別がん死亡リスクの経年変動の統計解析」

Title: “Statistical Analysis of Time Trend of Prefecture-specific Cancer Mortality in Japan”

要 約 :

Summary:

It is considered that disease risk, which is usually quantified by incidence or mortality, may have some region-specific time-trend variation due to the change of environmental factors such as exposure level and customs of residents. In this paper we propose a new statistical method for analyzing time trends in municipality-specific incidence data. Using the proposed method, we analyzed the prefecture-specific cancer mortality data in Japan during the period from 1975 to 2002.

Two data sets are used for the current study. One is calendar-year, prefecture-specific number of cancer deaths, which were reported as a part of Vital Statistics of Japan (1975-2002) from Japanese government. The other is prefecture, age-specific population size, which are based on successive six national censuses 1975, 1980, 1985, 1990, 1995 and 2000. For the reference population we adopted the average of whole Japan during the period from 1975 to 1994. There are 47 prefectures in total.

The ordinary Growth Curve Model (GCM) is a useful statistical tool for analyzing a repeated measurement data. GCM assumes that (i) random effects and measurement errors are distributed according to normal distributions, (ii) the covariance structure of measurement error is homogeneous. In the case of mortality data, we consider that (i) is acceptable if expected numbers of deaths are large enough, but (ii) is not. In this case (ii) should be heterogeneous. We can not apply the original GCM to mortality data. Therefore, we develop a new method by extending GCM, which is based on the Poisson regression model.