

Chapter 1

Introduction

Many medical and public health issues, using statistical models of varying complexity are used for analyzing these data. Logistic regression (Hosmer & Lemeshow, 2000; Kleinbaum & Klein, 2002) is a statistical method widely used to model the association between a binary outcome. These refer to events that either happen or don't happen, so they comprise factor variables with two levels. When the determinants are categorical factors can be structured as a multi-way contingency table of counts and the data for analysis comprise of adverse outcomes in the cells of this table. This method was applied to the first study, *Length of Stay of Patients Dying in Central Region Hospitals in Thailand*, which presented confidence intervals for adjusted proportions using logistic regression with weighted sum contrasts.

Since, linear regression assumes numerical outcomes. As for linear models, the determinants can be factors base on categorical variables, and the outcome variable is a linear function. If the normality assumption is not plausible, data transformations by take logarithms, the exponential relation takes the linear model can be fitted by Log-transformed linear regression. Next, the generalized linear models (GLMs) with Poisson and negative binomial assume outcomes are counts. Poisson and negative binomial distributions arise naturally as random counts with population-at-risk denominators. These statistical methods were used to the second study, *Muslim Victims of Terrorism Violence in Southern Thailand*. The incidence rate of Muslim victims as the outcomes are counts per person-year, unit population at risk in a

specific period of time, which can be used to compare the relative risks of the outcome for different factors such as sex, age groups, regions and years.

1.1 Rationale for study

Health expenditure increases substantially with LOS. The time spent in hospital by patient differs according to disease, treatment facility, cost of treatment and discharge status. Hospital stay terminated by death is an important outcome event, with death usually reflecting the severity and burden of disease.

LOS data has a highly positive skewed distribution (Xiao et al., 1999; Lee et al., 2003; Kulinskaya et al., 2005). The statistical analysis LOS data using Logistic regression model and log-linear regression model were used to handle skewed in the LOS distribution.

However, the empirical distribution of LOS is positively skewed so LOS models have used logistic regression to avoid symmetry assumptions (Ruttimann et al., 1996; Lim et al., 2009). Through a better understanding of the factors affecting longer LOS, it will be useful for health care services, treatment during hospitalization, and the allocation of resources on the basis of health care service at hospitals. By the way, to examine the variation in LOS of patients dying in hospital in the Thai central region, with respect to the patient's principal diagnosis and demographic status, and hospital size and geographic location were taken into account in the model.

Also, Terrorism violence is an important public health issue and in many respects is similar to a deadly disease that can reach epidemic proportions. The statistical models were used to describing the incidence rate of injuries to civilian resident victims of violence from terrorism in the target area defined as Pattani, Yala and Narathiwat