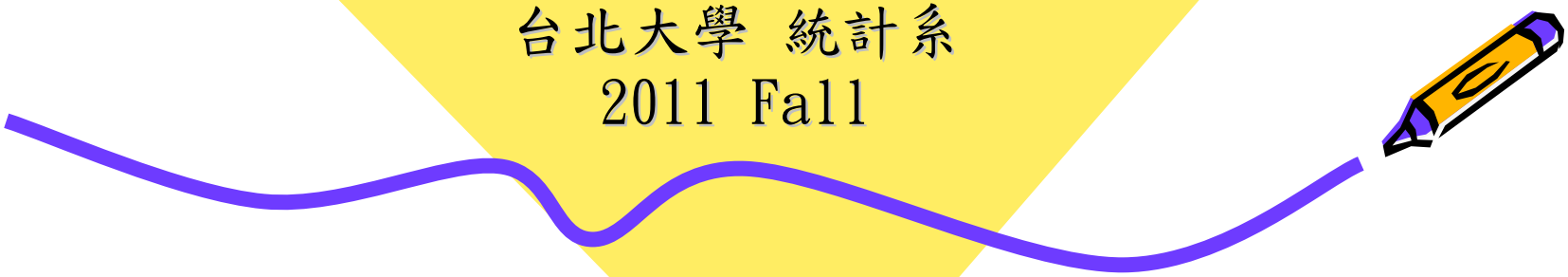
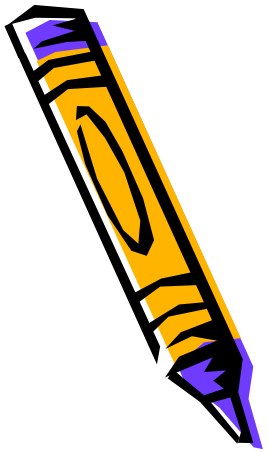
Survival Analysis

Instructor: 歐士田 (Austin)
台北大學 統計系
2011 Fall



Instructor's information



- 學歷
  - Bachelor from Tamkang University (1986)
  - Master and Ph. D from Texas A&M University (1994)
- 經歷
  - Providence University (Applied Math.)
  - Tamkang University (Statistics)
  - Center for Drug Evaluation (Statistical Reviewer)

Instructor's information

- Office Hours
  - Mon (台北, 9-11AM, 25024654-18287);
  - Wed (三峽, 10-4PM, 26748189-66765);
  - Thur (台北, 10-4PM, 25024654-18287); or make appointments by e-mail.
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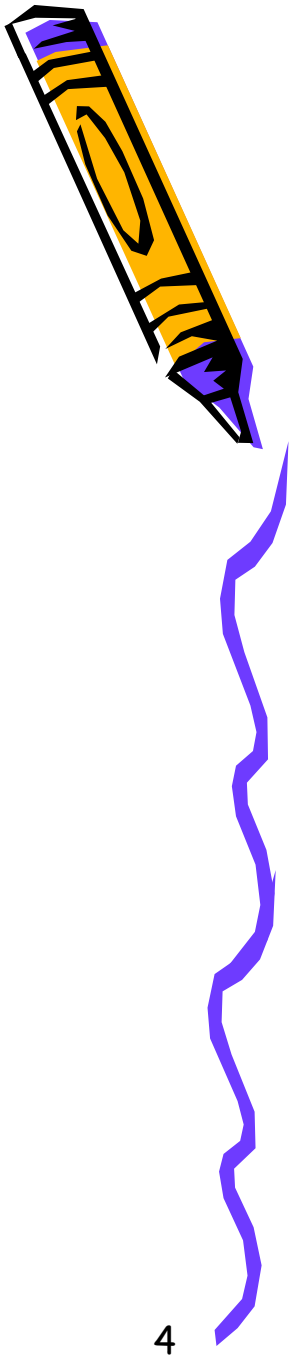
- Office phone
  - 25024654-18287 (台北); 26748189-66765 (三峽)

Tips for learning statistics effectively

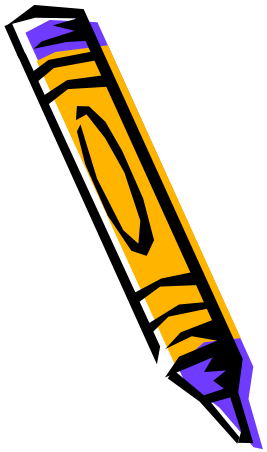


- English-understanding
- Practical questions and objectives
- Statistical terms
- Step-by-step toward the goal
- Read “Preface”

Survival Analysis
(From Wikipedia)

- **Survival analysis** is a branch of statistics which deals with
  - death in biological organisms and failure in mechanical systems.
- This topic is called *reliability theory* or *reliability analysis* in engineering, and *duration analysis* or *duration modeling* in economics or sociology.

Survival Analysis
(From Wikipedia)



- Survival analysis involves the
  - modeling of time to event data;
- In this context, death or failure is considered an "event" in the survival analysis literature.

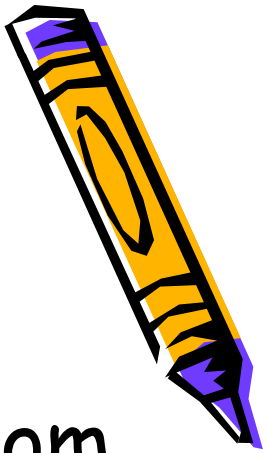
Questions answered by Survival analysis

- What is the fraction of a population which will survive past a certain time?
- Of those that survive, at what rate will they die or fail?
- Can multiple causes of death or failure be taken into account?
- How do particular circumstances or characteristics increase or decrease the odds of survival?

Statistical things required.....

- Estimation (point and confidence interval)
- Hypothesis Testing

You must be sure the followings



- Understand the course material from the practical point of view;
- Know how to use the statistical tools learned before;
- Know why you need to learn the topics.

Course information

- Text book: ”*存活分析*” by 林建甫
- Course Evaluation
  - Homework (40%);
  - Midterm presentation (30%);
  - Final presentation (30%).

Course content

第 01 章 ： 存活分析概論
第 02 章 ： 存活函數, 設限與截略
第 03 章 ： 參數模型存活分析
第 04 章 ： 無母數方法估計存活函數
第 05 章 ： 無母數方法-比較兩個或多個樣本之存活函數
第 06 章 ： Cox 比例危險模型
第 07 章 ： Cox 延伸模型

Course content

第 08 章 ： Cox 迴歸模型之診斷

第 09 章 ： 截略與區間設限資料存活分析

第 10 章 ： 多變量存活分析簡介

第 11 章 ： 群聚存活資料: 邊際模型

第 12 章 ： 群聚存活資料: 脆弱模型

第 13 章 ： 復發事件資料: 邊際模型

第 14 章 ： 復發事件資料: 脆弱模型

Communication and Interaction are highly appreciated !