人口統計學(Demography)

- **Instructor:** Jack C. Yue (余清祥)

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- **Office Hour:** 10:00~12:00 Every Thursday or by appointments

- **References:**

  1. My lectures and handouts
  2. Introduction to the Mathematics of Demography (1997), by R. L. Brown (Society of Actuaries)
  3. Statistical Demography and Forecasting (2005), by J. M. Alho and B. D. Spencer
  4. 人口統計(人口統計理論與實務),范子華編著(1992).
  5. Applied Demographic: An Introduction to Basic Concepts, Methods, and Data (1990), by S. M. Murdock and D. R. Ellis.
  6. Applied Mathematical Demography (1985), by N. Keyfitz.

- **Course Description:**

The course is concerned with commonsense questions related to demography, such as the effect of mortality improvement on the population aging and the relationship between marriage rate and fertility rate. In particular, many statistical methods will be used (such as survival analysis), in addition to the history of development in demography and demographic methods.

Topics covered in this course include: *Data and Census*, *Fertility and Mortality*, *Life Table and Its Construction*, *Stationary Population*, *Stable Population*, *Population Projection*, *Human Migration* and *Taiwan's Future*.

Activities in class cover a broad spectrum. Emphasis is placed on class participation. Considerable time is spent on the introduction and discussion of demographic concept, and the discussion of the connection between the current events and demography. A small number of lectures cover specific statistical topics. The students are recommended to participate 2023 annual conference of Taiwan Population Association (National Taiwan University, Taipei).

- **Grading:**

  There are regularly based homework and a final exam. The homework counts 40%, in-class discussions 25%, and the final exam (or a final project) 35%. The one who fails to attain the final exam will result "Fail" in the final grade.

- **Topics and contents:**

  - ✓ Data and Census:
    →Data Sources, History of Census, Sampling and Census, and Recent Development of Census
  - ✓ Fertility and Mortality:
    →Definition of Fertility and Mortality Rates, Standard Mortality Ratio, Fertility Theory, Fertility and Economics
  - ✓ Life Table and Its Construction:
    →History of Life Tables, Life Table Functions, Survival Curve, and Mortality Laws
  - ✓ Stationary Population:
    →Population Equation, Stationary Population, Lexis Diagram, and Applications of Stationary Theory
  - ✓ Stable Population:
    →Stable Population, Population Pyramid, Population Growth and Characteristic Equation, and Pension Burden
  - ✓ Population Projection:
    →Interpolation and Extrapolation, Logistic Curve, Cohort Component Projection Method, Leslie Matrix
  - ✓ Human Migration:
    → Internal and International Migration, Migration Theory, Gravity Models, Multi-regional Migration
  - ✓ Taiwan's Future:
    →Population Aging and Migration, Social Insurance, Longevity Risk, and Catastrophic Illness

- **Class Handouts:**

  Class materials, including in-class handouts, will be posted on my website http://csyue.nccu.edu.tw and no hard copies will be distributed.

週次	日期	單元主題
第 1 週	2/15	Introduction
第 2 週	2/22	Chapter 1 Data: Sources and Errors
第 3 週	3/1	Chapter 1 Data: Sources and Errors & Chapter 2 Measures of Mortality and Fertility, Assignment #1
第 4 週	3/8	Chapter 2 Measures of Mortality and Fertility
第 5 週	3/15	Chapter 3 Human Migration, Assignment #2
第 6 週	3/22	Chapter 3 Human Migration
第 7 週	3/29	Chapter 4 The Life Table & Its Construction, Assignment #3
第 8 週	4/5	Spring Break
第 9 週	4/12	Chapter 4 The Life Table & Its Construction
第 10 週	4/19	Midterm Project
第 11 週	4/26	Chapter 5 Stationary Population Theory, Assignment #4
第 12 週	5/3	Chapter 5 Stationary Population Theory
第 13 週	5/10	Chapter 6 Stable Population Theory
第 14 週	5/17	Chapter 6&7 Stable Population, Population Projections, Assignment #5
第 15 週	5/24	Chapter 7 Population Projections
第 16 週	6/1	Chapter 8 Taiwan's Future, Assignment #6
第 17 週	6/8	Case Studies (Applications of Demography)
第 18 週	6/15	Final Project/Final Exam