SCLG2632 Week 1 – 13 Lecture Notes

WEEK	CONTENT COVERED:
1	• POPULATION PYRAMIDS
2	• THE BASIC EQUATION OF DEMOGRAPHICS • CALCULATING TOTAL FERTILITY USING 5-YEAR AGE-SPECIFIC FERTILITY RATES
3	• CALCULATING MEAN AND MEDIAN • CALCULATING & INTERPRETING Z-SCORES
4	• SKEWNESS • INTERPRETING REGRESSION SCATTERPLOTS • INTERPRETING REGRESSION SLOPES, INTERCEPTS & R-SQUARED SCORES • CALCULATING EXPECTED VALUES
5	• REGRESSION TABLES • SEX RATIOS • LIKERT SCALES, BINOMIAL SCALES, INDICES
6	• REGRESSING AN INDEX
10	• MULTIPLE LINEAR REGRESSION • R-SQUARED STATISTIC (R^2) • CORRELATION / SLOPE OF A LINE (R) • STANDARDIZED REGRESSION • MULTICOLLINEARITY • STANDARDIZED REGRESSION SLOPE
11	• DEPENDENCY RATIO • BASE AND FULL MODELS • PARSIMONY • UNSTANDARDIZED AND STANDARDIZED COEFFICIENTS
12	• ASSESSING VARIABLES FOR AN INDEX • CORRELATION • REGRESSION • UNSTANDARDIZED AND STANDARDIZED COEFFICIENTS • SATURATED DATABASES
13	• STRUCTURED VS UNSTRUCTURED DATA • MACHINE LEARNING

WEEK 1

POPULATION PYRAMIDS

- A population pyramid / "age-sex pyramid", is a graphical illustration that shows the distribution of various age groups in a population, which forms the shape of a pyramid when the population is growing

- E.g. Stationary Pyramid: Percentages of population (age and sex) remains constant over time
  - Population contains equal birth rates and death rates

- E.g. Expansive Pyramid: Very wide at the younger ages
  - Characteristic of countries with high birth rate and low life expectancy
  - Fast growing population

- E.g. Constrictive Pyramid: Narrowed at the bottom
  - Population generally older on average, as the country has long life expectancy, a low death rate, but also a low birth rate

WEEK 2

THE BASIC EQUATION OF DEMOGRAPHICS

- Population (t + 1) = Population + Natural Increase + Net Migration
- Natural Increase = Births – Deaths
- Net Migration = Immigration (In migration) – Emigration (Out migration)

CALCULATING TOTAL FERTILITY USING 5-YEAR AGE-SPECIFIC FERTILITY RATES

- Calculating a country's Fertility Rate
  - Step 1: Only keep the age-range rows
  - Step 2: Divide each (fertility rate for each group) by 1000
  - Step 3: Multiply by the number of years in that age range
  - Step 4: Sum the total to get the final fertility rate

E.g. Age-Specific Fertility Rates, Australia, per 1000 Women

Age Group	Fertility Rate	(Divide by 1000)	(Multiply by 5)
15-19	10.5	0.0105	0.0525
20-24	44.6	0.0446	0.233
25-29	91.9	0.0919	0.4595
30-34	123.4	0.1234	0.617
35-39	71.9	0.0719	0.3595
40-44	15.3	0.0153	0.0765
45-49	1.2	0.0012	0.0060
			Country's Fertility Rate = 1.794