

STOE – 5:

Statistical Methods for Population Studies

Course Objectives

1. To enable the students to use statistical tools in population studies.
2. To acquire knowledge about application of statistics by government.

Course Pre-requisite: II PUC or equivalents

Course Outcomes

After studying the course, the student will be able to apply statistical tools and techniques in population studies and related sectors.

Pedagogy

The course is taught using traditional chalk and talk method using problem solving through examples and exercises. Students are encouraged to use resources available on open sources.

Unit 1: Vital Statistics

14 Hours

Introduction: Sources of data on vital statistics, Errors in census and registration data. Measurement of population, Rates, and ratios of vital events.

Measurements of Mortality: Crude Death Rate (CDR), Specific Death Rate (SDR), Standardized Death Rate, Cause of Death Rate, Case Fatality Rate, Infant Mortality Rate (IMR), Maternal Mortality Rate (MMR), Neonatal and Perinatal Mortality Rates.

Measurements of Morbidity: Morbidity Incidence and Morbidity Prevalence Rates.

Measurements of Fertility: Crude Birth Rate (CBR), General Fertility Rate (GFR), Specific Fertility Rate (SFR), and Total Fertility Rate (TFR).

Measurement of Population Growth Crude rates of natural increase, Pearl's Vital Index, Gross Reproduction Rate (GRR), and Net Reproduction Rate (NRR).

Unit 2: Lifetables

8 Hours

Life (Mortality) Tables: Assumption, descriptions of Complete and Abridged Life Tables, Cohort vs. Current Life Tables, Stationary and Stable population, Construction of Complete Life Table from population and death statistics, Central Mortality Rates and Force of Mortality, Uses of Life Tables.

Unit 3: Official Statistics

8 Hours

An outline of the present official statistical system in India, Methods of collection of official statistics, their reliability, and limitations. Role of Ministry of Statistics & Program Implementation (MoSPI), Central Statistical Office (CSO), National Sample Survey Office (NSSO), Registered General Office, and National Statistical Commission. The government of India's Principal publications contains data on the topics such as Agriculture, price, population, industry, finance, and employment.

Unit 4: Index number

12 Hours

Definition, Problems involved in the construction of index numbers, methods of constructing index numbers of prices and quantities, simple aggregate and price relatives method, weighted aggregate and weighted average of relatives method, important types of weighted index numbers: Laspeyre's, Paasche's, Bowley's, Marshall-Edgeworth, Fisher's, method of obtaining price and quantity index numbers, tests consistency of index numbers,

time reversal test and factor reversal test for index numbers, Uses and limitations of index numbers. Consumer price index number: Problems involved in the construction of cost-of-living index number, advantages and disadvantages, Aggregative expenditure method and Family budget method for the construction of consumer price index numbers. Applications of Cost-of-Living Index numbers. Definition and measurement of Inflation rate - CPI and GNP Deflator.

References

1. Mukhopadhyay, P. (1999): Applied Statistics, Books and Allied (P) Ltd.
2. Goon, A.M., Gupta, M.K. and Dasgupta, B. (2008): Fundamentals of Statistics, Vol. II, 9th Edition, World Press.
3. Biswas, S. (1988): Stochastic Processes in Demography & Application, Wiley Eastern Ltd.
4. Keyfitz, N and Caswell. H (2005): Applied Mathematical Demography (3rd edition), Springer.
5. Chattopadhyay, A.K. and Saha, A.K. (2012): Demography: Techniques and Analysis, Viva Books.
6. Ramakuar, R. and Gopal, Y.S. (1986): Technical Demography. Wiley Eastern Ltd.
7. Spiegelman M. (1980): Introduction to Demography, Harvard University Press.
8. Mishra B.D. (1980): An Introduction to the Study of Population, South Asian Pub.
9. Guide to current Indian Official Statistics, Central Statistical Office, GOI, and New Delhi.
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MODEL BLUEPRINT		
Code number:		STOE – 5
Title of the paper:		Statistical Methods for Population Studies
Unit number	Number of hrs	Total marks
1	14	29
2	8	16
3	8	16
4	12	25
Total	42	86
Maximum marks for the paper (Excluding bonus questions)		60