Department: Public Policy

Course No: PP 221Q

Title: Public Policy Research Models

Credits: 3

Contact:

WQ: Q

Catalog Copy :PP 221Q. Public Policy Research Models. Either semester. Three credits. Prerequisite: PP220 and STAT100Q or STAT110Q, or consent of instructor. Data analysis for program evaluation, public policy and management research including data description, probability theory, statistical inference, multiple regression and time series analysis.

Course Information: The purpose of this course is to prepare students to be critical consumers and effective producers of statistical evidence presented in support of policy arguments. Students will learn: To use descriptive, correlational and multiple regression analysis to understand policy problems and to implement specific policy research designs, to present and evaluate policy arguments that make use of descriptive, correlational , and multiple regression analysis. This course will combine lectures, examples, exercises and assignments to expose students to the fundamentals of probability theory, statistical inference, multiple regression, and times series analysis. Emphasis will be on applying these tools in the evaluation of public policies, programs and organizations. Course requirements will vary depending with instructor but are likely to include: weekly readings from an applied statistics text such as H.S. Moore and G.P. McCabe Introduction to the Practice of Statistics, L.C. Hamilton, Data Analysis for Social Scientists, or K.J. Meier and J.L. Brudney ,Applied Statistics for Public Administration; regular (e.g. weekly) problem sets and exercises, which will require students to derive statistical estimators from model assumptions, solve probability problems, calculate statistics, manipulate computer stored data and implement statistical procedures using statistical software, interpret the resuls of statistical procedures, present descriptive analyses and the results of statistical procedures graphically and in tables, and develop and evaluate policy arguments based on statistical evidence; a final exam, and perhaps a midterm, requiring tasks similar to those in the problem sets and exercises; at least one short writing assignment assessing an article that presents policy research that uses statistical analysis; a larger data analysis project

examining a policy or management issue requiring data description and presentation, formulation of a hypothesis, testing of the hypothesis using regression analysis, interpretation of analytic results, and drawing of policy implications might also be required in lieu of or in addition to the above requirements.

TOPICS:

>Data description (Graphical and numeric)

>Basic concepts in probability theory (conditional and marginal

>probabilities, random variables, probability distributions)

>Sampling

>Statistical inference

>Multiple regression (Interpretation, estimation,

>model specification, linking regression & research design)

>Time Series Analysis

>Using statistical evidence to make policy arguments

Q Criteria : A large part of the course will be devoted to multiple regression ,statistical inference, and hypothesis testing using multiple regression. Advanced statistical topics such as the criteria for evaluating statistical estimators, probability distributions used in computing inferential tests, and demonstrations of estimator bias will be covered. Emphasis will be placed on how these statistical concepts allow one to evaluate the validity of policy arguments which use statistical evidence. Formulas for standard deviations,

correlation coefficients, the least squares estimator, standard error estimates will be used. Using linear and quadratic regression models to express and test theoretical hypotheses , and how such functional forms are interpreted will be discussed. Students will be required to solve probability problems. Exercises and exam questions will require students to calculate averages, standard deviations, correlation coefficients, bivariate regression coefficients, and test statistics to reinforce understanding of these statistics. Derivation of statistical formulas will also be required. The primary focus of the course is to learn how interpret these statistics and to use them to assess societal needs and public problems, to formulate and test theoretical hypotheses about public policy, to evaluate public programs and to support policy arguments.

Role of Grad Students: none