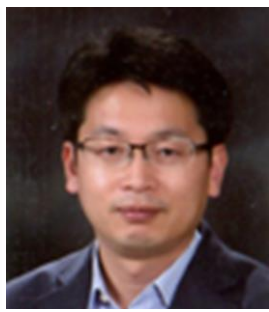




Introduction to Quantitative Methods

Course Code			
Class Times	Mon/Wed/Thu Type A(9:00~1:00)	Classroom	Rm 113, Bldg 57-1
Equivalent Year Level	1	Course Credit	3
Instructor	Kilkon Ko	Sessions	1-14
Office	Rm 311, Bldg 57-1	Email	kilkon@gmail.com

□ Instructor's Profile



Kilkon Ko

Associate Professor in Graduate School of Public Administration
Seoul National University

Editor-in-Chief, Asian Journal of Political Science

Editorial board member, International Review of Administrative Sciences

Education

Ph.D. in Graduate School of Public and International Affairs (**University of Pittsburgh, USA**)

(Dissertation: "Behaviors of Policy Analysts in Public Investment Decisions: How Policy Analysts Make Judgments" Chair: John Mendeloff)

The Best PhD Dissertation Award of Association for Public Policy Analysis and Management (APPAM) 2005-2006

MPA in Graduate School of Public Administration (**Seoul National University, Republic of Korea**)

Master Thesis: "Impact of the Learning Process to Organizational Cooperation: Application of Cellular Automata to the Agency Theory", Best Masters Paper of the Year

B.S. in Applied Statistics, School of Business (**Yonsei University, Republic of Korea**)

Expertise

Organizational Theory, Program Evaluation in the Public Sector, Public Policy Theories and Application, Public Administration in Asia, Research Methods, Theories of Public Administration, Policy-Making Process, Corruption and Ethics



Most Recent Works

- Kilkon Ko, Hui Zhu, Hongping Lian (2017), Adoption of the Market Mechanism and Its Impact on Illegal Land Use in China, China: An International Journal, 15(4), 90-110. (SSCI)
- Kilkon KO (2017), The necessity and effect of question-driven evaluation in data base evaluation and limitation of effect size-based evaluation, The Korean Journal of Policy Evaluation & Management, 27(2), 201-229. (in Korean)
- Hyunwoo Tak & Kilkon Ko (2017), Critical Review of Welfare Dependency in Active Labor Market Programs in Korea: Existence, Causes, and Interpretations, International Review of Public Administration, 22(3), 300~319.
- Kilkon Ko & Kayoung Shin, “How Asian Countries Understand Policy Experiment as Policy Pilots”, Asian Journal of Political Science, 25(2), forthcoming.
- Kilkon Ko, Sueyeon Cho,(2017), "How Do Corruption Experienced Citizens Understand Causes of Corruption?," Korean Society and Public Administration ,28(1), pp. 31~56. (in Korean)
- Kilkon Ko, D. Kim(2016), “What Affects the Survey Response Time and How to Utilize It?: A Case of the Administration Satisfaction Survey”, *Korean Journal of Policy Studies*, 25(3), 211-241.
- Kilkon Ko (2015), "Integration of Integrity Information into Performance Evaluation: The Impact on Korean Public Enterprises", *International Public Management Journal*, 18(3), 437-457.(SSCI)
- Kilkon Ko, H. Tak, (2015) "Detection of Extreme Decision Making Units and Their Impact on Sensitivity to Data Envelopment Analysis Results of Public Enterprises", *The Korean Policy Studies Review*, 25(3), 183-204. (in Korean)

Books

1. Kilkon Ko, *Data visualization in Social Science*, Bubmunsu, forthcoming
2. Kilkon Ko, *Categorical Data Analysis*, Munwoo, forthcoming
3. Kilkon Ko (2017), *Rethinking Singapore: Values and Socio-economic system*, Munwoo
4. Kilkon Ko (2017), *Theories of Efficiency Analysis: DEA and Stochastic Frontier Analysis*, Munwoo



□ Course Information

Course Description	<p>This course is specially designed for undergraduate students who want to systematically understand social phenomena through numbers. Although quantitative analysis methods are comprehensive and have been developed over years in different disciplines, the essence of statistics is to answer following two questions: “how to summarize quantitative information” and “how to make inference on the population’s characteristics”.</p> <p>To tackle with these two questions, we, firstly, learn the statistical theory. This module will cover probability theory, probability and sampling distribution, hypothesis tests of group means, Chi-Square test for categorical variables, and correlation and regression analysis.</p> <p>During the process of learning these theories, students will have an opportunity to learn how to use statistical software. In this course, students will use EXCEL and SAS in the class. To help student understand other parts of the world, we will use World Value Survey data. All questions in the midterm and final exam questions should be answered using statistical software.</p>
Course Evaluation	<p>Class participation 10% Assignment 30% Midterm exam 30% Final exam 30%</p> <p>Attendance will be important for keeping up with class. Good attendance and active participation will be reflected in grade.</p>
Course Materials	Weiss, N. A. (2005). <u>Introductory statistics</u> . 9 th ed. Boston, Addison-Wesley.
Etc. (e.g. Guidelines)	Students are expected to read the chapters of the lecture.

□ Course Schedule

Session 1 : Introduction: what are scientific methods, quantitative method, and statistics?

- What is a scientific method?
- Difference btw qualitative and quantitative analysis?
- Purpose of statistics

Session 2 : Describing and summarizing information: distribution & variation

- SAS Introduction
- Measurement



- **Sample and population**
- **Measures of central tendency**
- **Measure of variability and dispersion**
- **Drawing a cross table using EXCEL**

Session 3 : Visualization of Data

Session 4 : Normal Distribution

- **Shape of normal distribution**
- **Characteristics of normal distribution**

Session 5 : Fundamental concepts for statistical inferences

- **Random sampling: treatment, control, randomization, and blinded and double blinded**
- **Sampling error**
- **Sampling distribution**
- **Central limit theorem**
- **Law of large number**

Session 6, 7 : Confidence Intervals

- **CI for the mean with population standard deviation is known**
- **CI for the mean with population standard deviation is unknown**
- **Confidence Intervals for proportions**
- **Margin of error**
- **EXCEL**

Session 8 : Midterm Exam

Session 9 : Hypothesis testing with a single sample means

- **Null and Alternative hypothesis**
- **Type I, II, and III error**
- **P-value**

Session 10 : Hypothesis testing with two sample means

- **Independent t-test**
- **Paired t-test**



Session 11 : Hypothesis test of categorical variable: Chi-square test

- Association and Independent test
- The Chi-Square Test

Session 12-13 : Correlation and Simple Regression

- Assumptions
- Normal equation and BLUE
- Model Fits
- Statistical significance of regression coefficients
- Interpretation of coefficients

Session 14 : Multiple Regression

- Assumptions
- Variable Transformation
- Dummy variable
- Partial regression coefficient
- Interpretation of coefficients

Session 15 : Final Exam