

Basic Statistics and Cost-Effectiveness Testing

Instructors: M. Sami Khawaja, Cadmus, and Scott Dimetrosky, Apex Analytics

Monday, August 7 | 9:30am - 5:30pm

\$150 | Includes 2 breaks and lunch

What exactly do we mean by confidence and precision? How do we tell if a differences between values are statistically significant? This workshop is perfect for anyone who needs to generate or use basic evaluation statistics, and is learning these for the first time or looking for a refresher class.

- **Reasons for statistics.** What the various statistical measures (mean, variance, proportion, range) are. How are they used? How to compute/interpret them.
- **Statistical Tests.** How to use statistics for testing differences among groups (e.g., participants and nonparticipants). Among different time periods (e.g., pre and post). What are the statistical tests? How you compute/interpret them. Confidence and precision. Point and interval estimates.
- **Sampling.** Types, sample size determination.
- **Data Sources/cleaning.** Program tracking, weather, economic, demographics. Outliers, identification, corrections.
- **Explaining variation.** Regression models, assessing quality of the regression model.
- **Expressing Uncertainty.** Acceptable uncertainty, tradeoff with cost, value of information, confidence and precision, method of improving confidence and precision, methods for decreasing sample size.

The Cost-Effectiveness Testing segment will cover:

- **The different cost-effectiveness tests:** How do we calculate the Total Resource Cost (TRC) test, Societal Cost Test (SCT), Program Administrator Cost (PAC) test, Participant Cost Tests (PCT), and Ratepayer Impact Measure (RIM) tests?
- **Selecting the proper test:** How are the tests related? How are they different? Why would we choose one test over another?
- **Uncertainty around the tests:** What interest rates should be used? How are non-energy benefits (NEBs) handled? What are some of the other debates/controversies around the tests?
- **Evaluation and cost-effectiveness:** What data should evaluation be collecting to support cost-effectiveness testing?
- **What are states using?** What are states currently using? Why do some states select certain tests?

Intended Audience: Evaluators, program staff and program managers with limited knowledge of statistics. All statistical terms will be explained in simple terms using data from real projects. The emphasis of the workshop is on interpretation of statistical results and different cost-effectiveness tests, including how they are calculated, how they are used, and how cost-effectiveness policies varies across the country.

About the Instructors:



Dr. M. Sami Khawaja, a senior vice president at Cadmus, oversees the firm's Energy Services Division (formerly Quantec, LLC), which currently has a professional staff of more than 150.

Dr. Khawaja has more than 25 years of economic consulting experience, and he specializes in forecasting, market transformation assessment, pricing, cost/benefit analysis, and statistical and quantitative analysis for utilities and government agencies. He is also nationally recognized as a leader of program design and evaluation methods.

In addition to being one of the authors of the International Performance Measurement and Verification Protocol (IPMVP), Dr. Khawaja co-authored the Program Impact Evaluation Guide for the public-private collaborative National Action Plan for Energy Efficiency (NAPEE). Earlier this year, he served as the lead author on the Impact Evaluation Guide for the Electric Power Research Institute (EPRI).

An adjunct professor of economics at Portland State University, Dr. Khawaja teaches quantitative economics and statistics. He is one of the founders of the Applied Energy Economics and Policy graduate certificate program at Portland State.



Mr. Scott Dimetrosky is the founder and president of Apex Analytics, and has led planning and evaluation studies for dozens of utility energy-efficiency, load management, and market transformation programs during his 25-year career.

Mr. Dimetrosky is a nationally recognized expert in lighting program evaluations, serving as the lead author for the Department of Energy Uniform Methods Project (UMP) Residential Lighting Evaluation Protocols, and is currently managing residential and commercial lighting evaluations in five states. Mr. Dimetrosky has delivered papers at over 20 energy efficiency conferences, and taught principles of Demand-Side Management (DSM) and DSM evaluation courses. He is on the Planning Committee for the International Energy Program Evaluation Conference (IEPEC) and a former board member of the Rocky Mountain Chapter of the Association of Energy Service Professionals (AESP). He has an M.B.A. in Marketing Research & Quantitative Methods from Cornell University and a B.A. in Sociology from the University of Michigan.