Instrumental Variables and Regression Discontinuity Design Training Course

Professional Development Training Course Outline

Category	Research and Data Analysis	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

In today’s data-driven world, policy analysts, economists, and social scientists face the persistent challenge of identifying causal relationships in the presence of endogeneity and selection bias. The Instrumental Variables (IV) and Regression Discontinuity Design (RDD) frameworks have become powerful tools in advanced econometrics to obtain unbiased estimates and infer causality. Instrumental Variables and Regression Discontinuity Design Training Course offers a deep dive into the application, interpretation, and critical evaluation of IV and RDD methodologies using real-world data and state-of-the-art statistical tools.

Designed with trending academic and professional demands in mind, this course equips learners with cutting-edge econometric techniques, hands-on training in Stata/R/Python, and step-by-step guidance on how to choose valid instruments and design quasi-experiments. Whether you're working in public policy, health economics, education research, or development studies, mastering IV and RDD will transform your ability to extract actionable insights from complex data.

Programme Curriculum

Instrumental Variables and Regression Discontinuity Design Training Course

Introduction

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Course Objectives

1. Understand the core concepts and assumptions of Instrumental Variables (IV) estimation.
2. Identify and evaluate valid instruments in real-world applications.
3. Analyze causal relationships using Two-Stage Least Squares (2SLS).
4. Distinguish between weak and strong instruments using statistical diagnostics.
5. Apply Regression Discontinuity Design (RDD) in various policy contexts.
6. Differentiate between sharp and fuzzy RDD techniques.
7. Conduct robustness checks and falsification tests for RDD.
8. Interpret results from IV and RDD with strong empirical rigor.
9. Leverage Stata, R, or Python for IV and RDD implementation.
10. Critically assess academic and policy studies employing IV or RDD.
11. Integrate IV and RDD methods into monitoring and evaluation frameworks.
12. Design a research project using appropriate causal inference techniques.
13. Develop policy recommendations grounded in sound econometric analysis.

Target Audience

1. Policy Analysts
2. Data Scientists
3. Development Economists
4. Academic Researchers
5. Social Science Students
6. Monitoring and Evaluation Professionals
7. Public Health Analysts
8. Financial Economists

Course Duration: 5 days

Course Modules

Module 1: Foundations of Causal Inference

- Understanding correlation vs causation
- Role of Randomized Control Trials (RCTs)
- Threats to causal identification
- Introduction to observational data challenges
- Conceptual frameworks for causal inference
- **Case Study: Evaluating education outcomes using non-randomized data**

Module 2: Introduction to Instrumental Variables (IV)

- Definition and intuition behind IV
- Classical examples and applications
- Conditions for a valid instrument (relevance & exogeneity)
- 2SLS and reduced-form equations
- Common pitfalls and solutions
- **Case Study: The impact of military service on earnings**

Module 3: Weak Instruments and Diagnostics

- Consequences of weak instruments
- Statistical tests for instrument strength
- Partial R-squared and F-statistics
- Overidentification tests
- Solutions and remedies
- **Case Study: The effect of schooling on wages using quarter of birth**

Module 4: Advanced Topics in IV

- Limited information maximum likelihood (LIML)
- Heterogeneous treatment effects
- Local average treatment effects (LATE)
- Multiple instruments and multicollinearity
- Instrument selection strategies
- **Case Study: Access to healthcare and health outcomes in rural areas**

Module 5: Regression Discontinuity Design (RDD) Basics

- Sharp vs fuzzy RDD
- Graphical analysis and visual diagnostics
- Running variable and cutoff definition
- Continuity assumption and bandwidth selection
- Kernel weighting and local polynomial regression
- **Case Study: Evaluating scholarship impact based on test scores**

Module 6: Validity and Robustness in RDD

- Placebo tests and falsification strategies
- Covariate balance checks
- McCrary density test
- Sensitivity to bandwidth choices
- Nonparametric vs parametric estimation
- **Case Study: Minimum wage policy and employment rates**

Module 7: Software Implementation of IV and RDD

- Stata commands and output interpretation
- Implementing IV and RDD in R (e.g., ivreg, rdrobust)
- Python packages for econometrics (linearmodels, econml)
- Automating diagnostics and reporting
- Best practices in reproducible research
- **Case Study: Public finance analysis using Python notebooks**

Module 8: Designing Your Own Causal Study

- Framing policy questions as causal problems
- Choosing between IV and RDD approaches
- Ethical considerations in causal inference
- Writing data-driven policy recommendations
- Structuring empirical papers for publication
- **Case Study: Learner-designed project proposal and feedback**

Training Methodology

- Instructor-led online or in-person interactive lectures

- Hands-on sessions using Stata, R, and Python with datasets
- Group discussions and peer feedback on case studies
- Step-by-step guided coding walkthroughs
- Real-time Q&A with econometrics experts
- Capstone project involving practical application and presentation

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

Ready to enroll or request a customized program? Book online or contact us:

Register Online Now

Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com