Detailed Workshop Course Content

Topics	Details	Resource Person
Day 1: August 02, 2024 (Friday)		
Session 1: Quantitative Survey Design	• Evaluation Framework • Identifying needs of quantitative surveys for evaluation • Questionnaire Design	Dr. Babur Wasim
Session 2: Sampling Design and Power Analysis for Impact Evaluation	• Sample framework • Non-probability and probability sampling methods and their limitations • Computing sample sizes for impact evaluation surveys • Power analysis	
Session 3: Getting start with STATA	• Installation of STATA on laptops • An Introduction of STATA • Data import and export • Do file setup • Operators and expressions • Variable generation • Developing working file	Dr. Shujaat Farooq
Day 2: August 03, 2024 (Saturday)		
Session 4: Impact and Causal Inference; the Counterfactual Approach	• Counterfactual; basic non-experimental, experimental, and quasi-experimental designs • The counter-factual approach • Example of Balsakhi Program in India and other examples • Constructing the counterfactual; Treatment and control, Pre-Post, simple difference	Mr. Bilal Hassan Khan

	• The problem of selection bias; self-selection or selection into treatment • Confounding and omitted variable bias; example using regression	
Session 5: Experimental Research (RCTs)	• Random selection into treatment and control; constructing counterfactual that controls for all observed or unobserved confounding variables • Why Randomize • When and how to randomize • Post RCT analysis; Simple test or regression with or without confounding controls • Heterogeneity effects • Problems with RCTs • Examples using RCTs, of policy evaluations • Cluster RCTs and unit of randomization	Mr. Bilal Hassan Khan
Session 6: Power Analysis for RCT and Quasi-Experimental	• Power analysis concepts; bias and precision • Central limit theorem • Strategies to increase power • Sample size, sample variability sample design, design effect, cluster size, and ICC effect on sample precision • Power analysis for cross sectional simple random data • Power analysis for clustered data • Power analysis for panel data • Illustration using Stata	Mr. Bilal Hassan Khan

	• Introduction to Quasi-Experimental Research, selection bias revisited, Problems with RCT; Why not possible in many circumstances	
Session 7: Matching	• Curse of dimensionality • Propensity score matching (PSM) • PSM methods; Nearest Neighbor, Kernel, Radius, Caliper etc. • Exact matching; Genetic Matching, CEM, Entropy Balancing • Matching assumptions and limitations • Common Support • Regression versus matching • Matching combination with other methods such as regression and DID. • Examples of matching analysis using education data from Pakistan • Stata examples using Lalonde data; psmatch 2 and Entropy based matching	Mr. Bilal Hassan Khan
Day 3: August 04, 2024 (Sunday)		
Session 8: Instrumental Variables	Instrumental Variables	Dr. Zahid Asghar
Session 9: Regression Discontinuity Design (RDD)	• Concept of RDD Fuzzy and Sharp • Validity and assumptions • Endogeneity/Exogeneity and Causal Inference	

	• Application by using practical data	
Session 10: Difference in difference (DID)	• Before and after and with and without design • Illustration of simple matching • Assumptions of DID; parallel trends assumption • Placebo and sensitivity testing • DID illustrated from the evaluation of the impact of electricity, boundary walls, toilets, and drinking water in school on increasing student enrollment in KPK • Combining DID with PSM or regression; an example of the impact of COVID-19 on student enrollment in KPK • Fixed Effects Models or Models with Panel Data. Fixed effects models similar to DID • Stata examples; using diff command and regression in long data format	Dr. Zahid Asghar & Mr. Bilal Hassan Khan
Session 11: Using Stata to illustrate DID, PSM, IV, RDD estimation, replicating Card and Krueger Paper	• Application of DID, PSM, IV, RDD using Health Insurance Subsidy program with STATA • Card and Krueger Paper replication will be made using STAT (paper on which Nobel prize was awarded).	Dr. Zahid Asghar & Mr. Bilal Hassan Khan
Session 12: Synthetic Control Analysis	• A comparative studies policy evaluation when you have a policy intervention at an	Dr. Zahid Asghar & Mr. Bilal Hassan Khan

	aggregate level such as schools, districts, or cities. • Use for evaluation of a policy implemented in a single aggregate unit such as a school, or district with many other similar entities forming a control group • Method illustration • California smoking legislation and various other examples • Student enrollment in KPK example • Stata illustration	