

Workshop on

STATISTICS FOR SOCIAL SCIENCES RESEARCH

(September 17 – October 22, 2022)



Conducted by

Aditya Agrawal

B. Tech (IIT Kanpur), MBA (IIM Bangalore), Pursuing Phd (IIT Bombay)

About the Workshop:

The workshop will be held on **September 17 – October 22, 2022** via online medium (through Zoom).

Focus of the Workshop:

Basic concepts in statistics are essential for practitioners and researchers alike. Not all researchers have a statistics background, and they would like to reinforce their basics. Further, after a stint in industry, it is not unlikely that few researchers and practitioners would like to revise the basic concepts.

In this workshop, we start right at the very basics and do not assume prior statistics knowledge. For people with varying needs, we have divided the workshop into various modules.

We will use MS Excel and SPSS in the workshop. In the workshop, we will have Hands-on practice on problems, and examples from the book by Anderson and Sweeney, will be discussed.

Learning Objectives:

Upon the completion of this course, the participants would learn

- Basics of Normal Distribution.
- Central Limit Theorem and Sampling Distribution
- Correlation and Covariance
- Interval Estimation
- t-Distribution
- Linear Regression
- Hypothesis Testing
- Significance Tests and Type I error
- Conceptual Clarity of p-value
- Z-test and t-test (1 Population Mean)
- 2 sample Z-test and 2 sample t-test
- Pooled sample variance

- Paired t-Test (Matched Sample t-Test)
- Chi-Square and F Tests
- Conceptual understanding of ANOVA
- Fundamental differences between ANOVA, MANOVA, ANCOVA
- One Way ANOVA
- Theoretical introduction of the concepts of Two-Way ANOVA (Within subjects ANOVA, Between Subjects ANOVA), Repeated Measures ANOVA, and Mixed ANOVA.

Who should attend and prerequisites?

This workshop is designed for researchers in various streams (OB, HRM, Marketing, Strategy, Communication, Operations, Decision Sciences etc.) who want to apply statistical techniques in their research projects. No previous background in statistics is necessary.

Participants will be expected have their laptops loaded with MS Excel and if possible SPSS (not mandatory).

Registration Fees and Details:

Full-time doctoral students:

Module 1: INR 3000/participant (including GST)

Module 2: INR 3000/participant (including GST)

If both modules are chosen, combined fee: Rs. 5000 /participant (including GST)

Part-time doctoral students and faculty:

Module 1: INR 4000/participant (including GST)

Module 2: INR 4000/participant (including GST)

If both modules are chosen, combined fee: Rs. 7000 /participant (including GST)

A group discount of 15 % is available if 4 or more participants register together.

Payment:

1. NEFT (online transfer):

Account Name: Skills Edge

Account No.: 657005602092

Bank: ICICI Bank

IFS Code: ICIC0006570

2. Razorpay:

Payment link is: <https://rzp.io/l/DXNIWt94SL>

Note: Payment link is common for Full-time and Part-time students, and faculty.

After making the payment, please fill the registration form at: <https://forms.gle/v1q2g6ve4asQBQpw6>

About the Workshop Coordinator:

Aditya Agrawal is a full-time Ph.D. researcher of Organizational Behaviour at the **Indian Institute of Technology Bombay**. He did his B. Tech (Civil Engineering) from **IIT Kanpur** and MBA from **IIM Bangalore**. Aditya brings a rich Industrial experience of more than fourteen years, specifically from the Energy and Real Estate sectors. His primary research interests are exploring Organizational Dysfunctional Behaviour, Positive Psychology, and Conflict Resolution. His Doctoral thesis is on the topic “Organizational Healing,” which was awarded the **most promising dissertation award** by the **MSR division of the Academy of Management**. Aditya was awarded the IIT Bombay’s School of Management, **Endowment Award** for academic performance during PhD.

Contact Details:

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WORKSHOP AGENDA

MODULE 1

DAY 1: SEPT 17, 2022 (SATURDAY)

Session 1 (3.30pm – 5 pm): Conceptual clarity of Variable type (independent, dependent, control), Two basic ideas of statistics – Central tendency and Dispersion (Mean and Standard Deviation), Linear Regression

Session 2 (5.30pm – 7.00pm): Basics of Normal Distribution. Standard Normal Distribution, Population and Sample, Central Limit Theorem and Sampling Distribution, Correlation and Covariance

DAY 2: SEPT 18, 2022 (SUNDAY)

Session 3 (3.30pm – 5 pm): Interval Estimation, T-Distribution

Session 4 (5.30pm – 7.00pm): Differentiating proposition and hypothesis, Hypothesis Testing, Significance Tests and Type I error

DAY 3: SEPT 24, 2022 (SATURDAY)

Session 5 (3.30pm – 5pm): Conceptual Clarity of P-value

Session 6 (5.30pm – 7.00pm): Z Test and T Test (1 Population Mean), Comparing Two means, Types of Hypothesis tests

DAY 4: SEPT 25, 2022 (SUNDAY)

Session 7 (3.30pm – 5pm): 2 sample Z test, 2 sample T-Test

Session 8 (5.30pm – 7.00pm): Pooled sample variance, Paired T Test (Matched Sample T Test), Estimating Population Variance, Chi-Square Test, F Test

WORKSHOP AGENDA

MODULE 2

DAY 5: OCT 8, 2022 (SATURDAY)

Session 9 (3.30pm – 5pm): Recap of Module 1 (Hypothesis testing, T-Test, Chi-Square Test, F-Test)

Session 10 (5.30pm – 7.00pm): Linear Regression: Simple Linear Regression Model, Estimated Regression Equation, Least Squares Method, Coefficient of Determination

DAY 6: OCT 9, 2022 (SUNDAY)

Session 11 (3.30pm – 5pm): Linear Regression contd. – Discussing Model Assumptions, Testing for significance through T Test

Session 12 (5.30pm – 7.00pm): Linear Regression contd. – Confidence Interval for β_1 , F Test, Using Estimated Regression Equation for Estimation and Prediction

DAY 7: OCT 15, 2022 (SATURDAY)

Session 13 (3.30pm – 5pm): Conceptual understanding of ANOVA, Understanding basic differences between ANOVA, MANOVA, ANCOVA

Session 14 (5.30pm – 7.00pm): One Way ANOVA, Assumptions and Tests of One Way ANOVA, workshop on excel and SPSS

DAY 8: OCT 16, 2022 (SUNDAY)

Session 15 (3.30pm – 5pm): Theoretical introduction of Two Way ANOVA (Within subjects ANOVA, Between Subjects ANOVA)

Session 16 (5.30pm – 7.00pm): Introduction of Repeated Measures ANOVA, and Mixed ANOVA with simple examples.

DAY 9: OCT 22, 2022 (SATURDAY)

Session 17 (3.30pm – 5pm): Two-way ANOVA demonstration through SPSS

Session 18 (5.30pm – 7.00pm): General discussion, wrap-up and conclusion. Feedback and Valediction