

Vishal Kumar Rai

Ph.D. in Economics — Research in Life-Cycle & Macroeconomic Modeling
Indian Statistical Institute – Delhi

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Summary

Ph.D. candidate at ISI Delhi specializing in life-cycle models of retirement, health, and labor under environmental and pandemic shocks. Research combines dynamic optimization, numerical simulation, and macroeconomic modeling using Julia and Python, with a focus on policy-relevant insights.

Research Interests

Macroeconomic Policy • Public Finance • Social Protection • Climate and Health Economics
• Computational Methods • Life-Cycle Modeling

Education

Ph.D. in Economics, Indian Statistical Institute – Delhi *2019 – Present*

Thesis: Essays on Life-Cycle Decisions under Environmental and Epidemiological Risks

M.A. in Economics, Delhi School of Economics *2016 – 2019*

B.A. (Hons.) Bus. Economics, *2012 – 2015*
College of Vocational Studies, University of Delhi

Research Papers

- ***Climate, Pollution and Endogenous Retirement***: Examines how pollution-induced health damage affects abatement and retirement decisions.
- ***Endogenous Retirement under a Pandemic***: Explores the impact of pandemic-driven mortality risk on health effort, consumption, and retirement timing.
- ***Occupational Vulnerability to Extreme Heat: Life-Cycle Model of Retirement and Welfare***: Extends life-cycle retirement models by incorporating occupational heterogeneity through differential vulnerability to extreme heat, affecting labor effort and welfare.

Skills

Programming & Simulation: Julia, Python; implemented detailed life-cycle and dynamic optimization models.

Modeling Methods: Life-Cycle Models, Dynamic Optimization, Targeted Calibration, Simulation with Mortality, Income, and Health Data.

Typesetting & Documentation: L^AT_EX, report writing, research documentation.

Experience & Teaching

Teaching Assistant, ISI Delhi (Prof. Chetan Ghate)

Macroeconomics I & Global Macroeconomics

Awards

Junior Research Fellowship (JRF), ISI, (2019)	Academic Excellence – CVS 3rd Rank (2014)
Top 25 Rank – DSE Entrance (2016)	CBSE Merit Certificate – 10 CGPA (2010)

Academic Service

Volunteered at the Annual Conference on Economic Growth and Development (ACEGD), ISI Delhi