Akhil Rao

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Education

2019	Ph.D., Economics, University of Colorado Boulder
2016	M.A., Economics, University of Colorado Boulder
2012	B.S., Business Administration, University of California Riverside

Experience

2025–	Chief Economist
	Rational Futures
2023–2025	Research Economist/Acting Chief Economist
	NASA Office of Technology, Policy, and Strategy
2019–2023	Assistant Professor
	Middlebury College
2014–2019	Teaching Assistant/Graduate Part-Time Instructor
	University of Colorado Boulder
2013–2015	Data Scientist
	Red9 Corporation

Research

Primary fields

Environmental economics; Computational economics; Space economics

Working Papers

[1] "Experimental price indices for satellite manufacturing" with Tina Highfill

[2] "The economics of location choice: evidence from the geostationary belt" with Nikodem Szumilo

[3] “Do economic principles explain orbital resource use in space?” with Daniel Kaffine

[4] “Close Encounters of the LEO Kind: Spillovers and Resilience in Partially-Automated Traffic Systems”
draft

[5] “OPUS: An Integrated Assessment Model for Satellites and Orbital Debris” with Mark Moretto, Marcus Holzinger, Daniel Kaffine, Brian Weeden
draft

[6] “Sustainability assessment of Low Earth Orbit (LEO) satellite broadband mega-constellations” with Ogutu B. Osoro, Edward J. Oughton and Andrew R. Wilson
draft

[7] “Economic principles of space traffic control”
draft

[8] “International cooperation and competition in orbit-use management” with Aditya Jain
draft

Journal Publications

[1] **Rao, A**., Rondina, G. (2025) “The Economics of Orbit Use: Open Access, External Costs, and Runaway Debris Growth”
Journal of the Association of Environmental and Resource Economists, 12(2), pp.353-388
DOI: 10.1086/730695

[2] Coulombe, R.G., **Rao, A**. (2025) “Fires and local labor markets”
Journal of Environmental Economics and Management, 130, 103109
DOI: 10.1016/j.jeem.2024.103109

[3] Guyot, J., **Rao, A**., Rouillon, S. (2023) “Oligopoly competition between satellite constellations will reduce economic welfare from orbit use”
Proceedings of the National Academy of Sciences, 120(43), e2221343120
DOI: 10.1073/pnas.2221343120

[4] Corrado, L., Cropper, M., **Rao, A**. (2023) “Space exploration and economic growth: New issues and horizons”
Proceedings of the National Academy of Sciences, 120(43), e2221341120
DOI: 10.1073/pnas.2221341120

[5] Ash, T., Bento, A.M., Kaffine, D., **Rao, A**., Bento, A.I. (2022) “Disease-economy trade-offs under alternative epidemic control strategies”
Nature Communications, 13(1), 3319
DOI: 10.1038/s41467-022-30642-8

[6] **Rao, A**., Burgess, M.G., Kaffine, D. (2020) “Orbital-use fees could more than quadruple the value of the space industry”
Proceedings of the National Academy of Sciences, 117(23), pp.12756-12762
DOI: 10.1073/pnas.1921260117

[7] **Rao, A**. (2020) “The Economics of Orbit Use: Theory, Policy, and Measurement”
Journal of the Association of Environmental and Resource Economists, 7(1), iii-iii. Dissertation abstract.
DOI: 10.1086/707515

Conference Proceedings

[1] Qureshi, R., Gleason, R., **Rao, A**., Mulder, S., Tauritz, D.R., Guzzetti, D. (2024) “A Tabletop Game to Study Business Wargaming in the P-LEO SATCOM Marketplace”
IEEE Conference on Games (CoG), pp.1-8
DOI: 10.1109/CoG60054.2024.10645581

[2] Qureshi, R.S., Roberts, C., Kimbrell, E., Mulder, S., **Rao, A**., Tauritz, D.R., Guzzetti, D. (2023) “A table-top game to simulate competition between P-LEO satellite internet constellations”
AIAA/AAS Astrodynamics Specialist Conference

[3] **Rao, A**., Letizia, F. (2021) “An Integrated Debris Environment Assessment Model”
8th European Conference on Space Debris Proceedings
DOI: 10.48550/arXiv.2205.05205

[4] Bennett, T., Cain, C., Campbell, N.S., Gemer, A.A., Marino, J., Niederwieser, T., **Rao, A**. (2018) “The CENKI Space Economic Simulator: Analytical Verification of an Agent-Based Modeling Engine”
IEEE Aerospace Conference, pp.1-9
DOI: 10.1109/AERO.2018.8396369

[5] Bennett, T., Cain, C., Campbell, N.S., Gemer, A.A., Marino, J., Niederwieser, T., **Rao, A**. (2018) “The CENKI Space Economic Simulator: Demonstrating Agent-Based Modeling on Satellite Market Data”
IEEE Aerospace Conference, pp.1-13
DOI: 10.1109/AERO.2018.8396565

Book Chapters

[1] **Rao, A**., Park, D. *Forthcoming*. “The Economics of Space Development”
In A. D’Costa (Ed.), *The Oxford Handbook on the New Space Economy*. Oxford.

[2] Guyot, J., **Rao, A**., Rouillon, S. (2025) “The long-run economics of sustainable orbit use”
In T. Hoerber, M. Borowitz, A. Forganni, B. Reynaud de Sousa (Eds.), *Routledge Handbook of Space Policy*, pp.195-214.

[3] Greenblatt, J., **Rao, A**. (2019) “K-Town: A Thousand-Person Colony”
In F. Crossman (Ed.), *Mars Colonies: Plans for Settling the Red Planet*, pp.149-176. The Mars Society.

Other Writing

[1] Brownhall, I., Burgess, M.G., Holzinger, M., Kaffine, D., Moretto, M., **Rao, A**. (2024) “Development of Reference Scenarios and Supporting Inputs for Space Environment Modeling”
Technical Report

[2] **Rao, A**. (2024) “A new measure of space economy manufacturing plant utilization”
SIB Insights, NASA internal publication

[3] **Rao, A**. (2024) “Estimated demand for mega-constellation internet service”
SIB Insights, NASA internal publication

[4] **Rao, A**., Adilov, N., Cunningham, B., Guyot, J., Rouillon, S., Wagner, J. (2021) “Economists’ Response to 86 FR 61335”
Our submission

[5] Castle-Miller, M., Anzaldúa, A., Davidson, H., Aganaba-Jeanty, T., Greenblatt, J., Hanlon, M.L.D., Matula, T.L., **Rao, A**., Shubin, L.G. (2020) “The Lunar Development Cooperative: A new idea for enabling lunar settlement”
The Space Review

[6] **Rao, A**. (2019) “Humans or Robots First?”
Politico: The Agenda

[7] **Rao, A**. (2019) “The economics of orbit use: Theory, policy, and measurement”
PhD Thesis, University of Colorado at Boulder

Teaching

Independent Study	2020-2023	Middlebury College
Space Economics	2021-2023	Middlebury College
Environmental Economics	2019-2023	Middlebury College
Economic Statistics	2019-2023	Middlebury College
Math Tools for Economists	2017-2018	University of Colorado Boulder
Principles of Macroeconomics	2015-2016	University of Colorado Boulder
Principles of Microeconomics	2014-2019	University of Colorado Boulder

Selected Honors and Awards

2021-2022	AERE Scholars Fellow
2020	ProQuest CGS Distinguished Dissertation Award in Social Sciences
2019	Wallace E. Oates Outstanding Doctoral Dissertation Award
2018	Sieglinde Talbott Haller Fellowship in Economics
2018	Center to Advance Research and Teaching in the Social Sciences Spring Graduate Student Award
2018	Summer Graduate School Dissertation Fellowship
2017	Reuben A. Zubrow Fellowship in Economics
2013	Coro Southern California Fellows Program in Public Affairs

Presentations

2024

[1] George Mason University

2023

[1] University of Alaska Anchorage

[2] Politecnico Di Milano Space Capacity Workshop

[3] Association of Environmental and Resource Economists Annual Meeting

[4] Oregon State University

[5] United States Air Force Academy

2022

[1] Secure World Foundation Orbital Carrying Capacity Workshop

[2] Auburn University Department of Aerospace Engineering Jack and Ann Waddey Invited Seminar

[3] George Washington University Space Policy Institute

[4] NASA Office of Technology, Policy, and Strategy

2021

[1] 8th European Conference on Space Debris

[2] IASC Commons in Space

[3] From Measurements to Understanding: ESA MASTER Modelling Workshop

2020

[1] CODER 2020 workshop

[2] Astronomics Society Workshop on the Economics and Law of Space (postponed; COVID-19)

[3] Secure World Foundation Workshop on Relevance of Economic Models to Space Debris Policy

[4] Association of Environmental and Resource Economists Virtual Conference

[5] GOSEE Conference

[6] National Space Council Lunar Polar Resources Roundtable

2019

[1] Middlebury College

[2] Institute for Defense Analyses

[3] Colorado School of Mines

2018

[1] Western Economic Association International AERE Session

[2] IEEE Aerospace Conference

[3] Pacific Council PolicyWest

2017

[1] Heartland Environmental and Resource Economics Workshop at Illinois

[2] CU Environmental and Resource Economics Workshop

Professional Activities

Conferences

- Co-organizer, IASC Commons in Space 2023 conference
- Co-organizer, IASC Commons in Space 2022 conference
- Co-organizer, IASC Commons in Space 2021 conference

Reviewing

- Climatic Change
- Journal of Environmental Economics and Management
- Environmental and Resource Economics
- PNAS Nexus
- Acta Astronautica
- Space Policy
- EcoHealth
- Journal of Space Safety Engineering

Boards

- Advisory Board member, EU study on Space Traffic Management 2020-2022

College Service

- Academic advisor
- Thesis advisor
- Faculty Strategy Committee (elected representative)