

Solutions for Estimating the Value of Land in a Large Urban Jurisdiction

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Aug 30 – Sept 1, 2020

Semida Munteanu

Lincoln Institute of Land Policy



▶ TRANSFORMING VALUATION THROUGH TECHNOLOGY ◀

Lincoln Institute of Land Policy

Mission

The Lincoln Institute of Land Policy seeks to improve quality of life through the effective use, taxation, and stewardship of land. A nonprofit private operating foundation whose origins date to 1946, the Lincoln Institute researches and recommends creative approaches to land as a solution to economic, social, and environmental challenges. Through education, training, publications, and events, we integrate theory and practice to inform public policy decisions worldwide.



Why Is Land Special?

- Land is different than buildings – in fixed supply, value not due to the efforts of any single individual.
- Land is a complex asset and its value depends on many factors: **access to services, land use regulations**, positive and negative externalities, **taxes**, and expectations about future development.
- Land valuation is essential for regulation, planning, land taxation. It allows public officials to quantify the benefits of public investments.
- Price transparency is critical for market efficiency: **accurate land valuation can improve the functioning of land markets.**

David C. Lincoln Fellowship on Land Valuation Methods

Objectives:

- Identify a set of best practices for valuing land, understand strengths and weaknesses of each approach, determine under what market conditions are they likely to work best.
- Pragmatic approaches that could be feasibly implemented by assessors.
- If possible, develop R packages for most practical methods.

Project Description:

- Maricopa County dataset: 12 years of land sales, improved sales, and assessment data
- Invited proposals to estimate land values based on this dataset; selected 11 proposals representing a broad mix of different approaches
- Papers will be published on the Lincoln website
- Future conference on *Measuring the Value of Land*



Paper Authors and Titles

Albouy, David and Minchul Shin, "A Statistical Learning Approach to Land Valuation: Optimizing the Use of External Information."

Bourassa, Steven and Martin Hoesli, "Land Valuation Using a Mix of Hedonic and Depreciated Cost Methods."

Clapp, John and Thies Lindental, "The Valuation of Urban Land: Comparison and Critique of Three CAMA Methods."

Cohen, Jeffrey, "Land Value Estimation in Maricopa County, AZ: A Space-Time Local Regression Approach."

Johnson, Erik, "Land Values and Machine Learning."

Larson, William and Jessica Shui, "Land Valuation using Public Records and Kriging: Implications for Land versus Property Taxation in Cities."

McMillen, Daniel and Ruchi Singh, "Land Valuation using Teardowns."

Peltola, Risto, "Automated Land Valuation in Maricopa County."

Vandell, Kerry and Arsenio Staer, "Parcel-Specific Land Valuation at the Metropolitan Scale: An Option Theoretic Approach."

Yang, Zhou, "A Modern Approach to Land Valuation: An Application of Artificial Neural Networks."

Zabel, Jeffrey, "A Matching Method for Land Valuation."

Working papers to be posted: <https://www.lincolnst.edu/publications>



Why Is This Project Important?

- Gold standard in valuation = comparable sales, but in large urban jurisdictions sales of vacant land are generally limited
- In densely built downtown areas, where land values are the most valuable, vacant land sales either don't exist or are not representative
- Technical challenge: Determining the price of land is an environment where land doesn't trade separately from buildings
- Partnership with Maricopa County – using real assessment data for land valuation modeling and analysis
- Bridging theory and practice – bringing together researchers and practitioners

Daniel McMillen

- Professor of Finance at the University of Illinois at Chicago, Distinguished Scholar at the Lincoln Institute, Fellow at Homer Hoyt Institute, Consultant at the Federal Reserve Bank of Chicago.
- Served as co-editor of *Regional Science and Urban Economics* from 2007 – 2017.
- Served as President of the American Real Estate and Urban Economics Association in 2017.
- Taught economics at University of Oregon, Santa Clara University, Tulane University, and the Chicago and Urbana-Champaign campuses of the University of Illinois.
- Published widely in real estate, urban economics, housing economics, and related fields.
- Expert in spatial analysis.
- Ph.D. in Economics from Northwestern University



Jennifer Rearich, MAS, RES

- CAMA Regression Modeler at the Maricopa County Assessor's Office.
- Builds valuation models, develops and maintains model deployment tools used by the modeling group.
- 2019 IAAO Emerging Professional Award
- Chairs the 2020 IAAO Guided Demonstration Report Writing Task Force, served on 2019 Data Quality Standard Task Force and the 2018 Benchmarking and Surveys Task Force
- Interested in mass appraisal, applications of data science to the assessment industry, and advancements in GIS.
- BS from Arizona State University and MPhil from the University of Cambridge.



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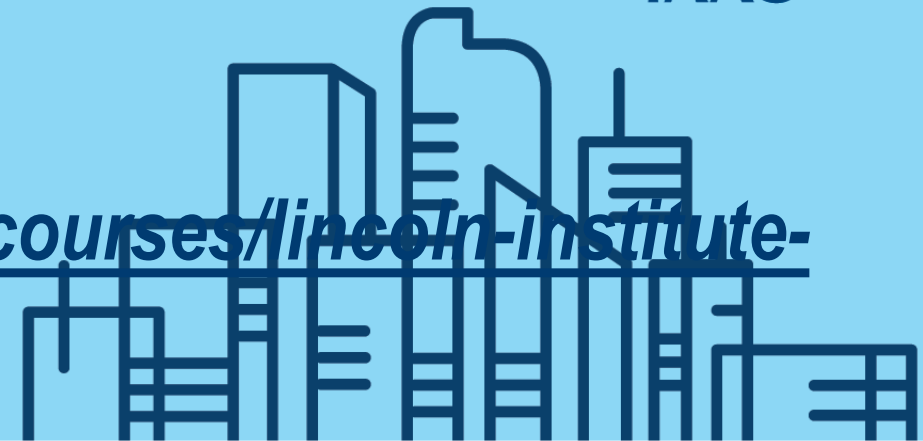
Download Presentations:

<https://www.lincolninst.edu/courses-events/courses/lincoln-institute-sessions-2020-iaao-annual-conference>

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