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Elijah Knaap

appointments

University of California-Riverside
Center for Geospatial Sciences
Associate Director   2019 –
School of Public Policy & Center for Geospatial Sciences
Postdoctoral Scholar   2018 – 2019

University of Illinois at Chicago
Dept. of Urban Planning and Policy
Visiting Assistant Professor & Postdoctoral Research Associate   2017 – 2018

University of Maryland
Dept. of Urban Studies and Planning & School of Information Studies
Adjunct Professor   2016 – 2017

Enterprise Community Partners, Inc.
Knowledge, Impact, & Strategy Team
Bart Harvey Postdoctoral Research Fellow   2016 – 2017

education

Ph.D. - Urban Studies and Planning, University of Maryland   2016

M.A. - Community Planning, University of Maryland   2013

B.A. - Sociology, University of Maryland   2011

publications

Refereed Articles

Cortes, Renan Xavier, Rey, Sergio, **Knaap, Elijah**, and Wolf, Levi John. Nov. 2019. An open-source framework for non-spatial and spatial segregation measures: the PySAL segregation module. *Journal of Computational Social Science* (0123456789). doi: 10.1007/s42001-019-00059-3.

Han, Su, Rey, Sergio, **Knaap, Elijah**, Kang, Wei, and Wolf, Levi John. Nov. 2019. Adaptive Choropleth Mapper: An Open-Source Web-Based Tool for Synchronous Exploration of Multiple Variables at Multiple Spatial Extents. *ISPRS International Journal of Geo-Information* 8(11), 509. doi: 10.3390/ijgi8110509.

Lung-Amam, Willow, Pendall, Rolf, and **Knaap, Elijah**. Oct. 2019. Mi Casa no es Su Casa : The Fight for Equitable Transit-Oriented Development in an Inner-Ring Suburb. *Journal of Planning Education and Research*, 0739456X1987824. doi: 10.1177/0739456X19878248.

Wolf, Levi John, **Knaap, Elijah**, and Rey, Sergio. Sept. 2019. Geosilhouettes: Geographical measures of cluster fit. *Environment and Planning B: Urban Analytics and City Science*, 239980831987575. doi: 10.1177/2399808319875752.

Wadsworth, Sally J., Corley, Robin P., Munoz, Elizabeth, Trubenstein, B. Paige, **Knaap, Elijah**, DeFries, John C., Plomin, Robert, and Reynolds, Chandra A. Sept. 2019. CATSLife: A Study of Lifespan Behavioral Development and Cognitive Functioning. *Twin Research and Human Genetics*, 1–12. doi: 10.1017/thg.2019.49.

Han, Su Yeon, Tsou, Ming-hsiang, **Knaap, Elijah**, Rey, Sergio, and Cao, Guofeng. May 2019. How Do Cities Flow in an Emergency? Tracing Human Mobility Patterns during a Natural Disaster with Big Data and Geospatial Data Science. *Urban Science* 3(2), 51. doi: 10.3390/urbansci3020051.

Finio, Nicholas, Lung-Amam, Willow, Knaap, Gerrit-Jan, Dawkins, Casey, and **Knaap, Elijah**. Feb. 2019. Metropolitan planning in a vacuum: Lessons on regional equity planning from Baltimore's Sustainable Communities Initiative. *Journal of Urban Affairs*, 1–19. doi: 10.1080/07352166.2019.1565822.

Lung-Amam, Willow S., **Knaap, Elijah**, Dawkins, Casey, and Knaap, Gerrit-Jan. Sept. 2018. Opportunity for Whom? The Diverse Definitions of Neighborhood Opportunity in Baltimore. *City & Community* 17(3), 636–657. doi: 10.1111/cico.12318.

Rey, Sergio, **Knaap, Elijah**, Han, Su, Wolf, Levi, and Kang, Wei. 2018b. Spatio-Temporal Analysis of Socioeconomic Neighborhoods: the Open Source Longitudinal Neighborhood Analysis Package (OSLNAP). *Proceedings of the 17th Python in Science Conference*, 121–128. doi: 10.25080/majora-4af1f417-012.

Nedovic-Budic, Zorica, Knapp, Elijah, and Ran, Jing. July 2018. Strategic Planning for GIS Design. *Geographic Information Science & Technology Body of Knowledge* 2018(Q3). doi: 10.22224/gistbok/2018.3.8.

Knaap, Elijah. Nov. 2017. The Cartography of Opportunity: Spatial Data Science for Equitable Urban Policy. *Housing Policy Debate* 27(6), 913–940. doi: 10.1080/10511482.2017.1331930.

Knaap, Elijah, Ding, Chengri, Niu, Yi, and Mishra, Sabyasachee. Jan. 2016. Polycentrism as a sustainable development strategy: empirical analysis from the state of Maryland. *Journal of Urbanism: International Research on Placemaking and Urban Sustainability* 9(1), 73–92. doi: 10.1080/17549175.2015.1029509.

Pendall, Rolf, Hayes, Christopher, George, Arthur, Dawkins, Casey, Jeon, Jae Sik, **Knaap, Elijah**, Blumenberg, Evelyn, Pierce, Gregory, and Smart, Michael. 2015b. Driving to Opportunities: Voucher Users, Cars, and Movement to Sustainable Neighborhoods. *Cityscape* 17(2), 57–87.

Mishra, Sabyasachee, Welch, Timothy F., Torrens, Paul M., Fu, Cheng, Zhu, Haojie, and **Knaap, Elijah**. Mar. 2015. A tool for measuring and visualizing connectivity of transit stop, route and transfer center in a multimodal transportation network. *Public Transport* 7(1), 77–99. doi: 10.1007/s12469-014-0091-2.

Mishra, Sabyasachee, Welch, Timothy, Torrens, Paul, Zhu, Haojie, and **Knaap, Elijah**. 2014b. Locating the Most Connected Transit Stop, Route, and Transfer Center: Tool for Users and Decision Makers. In: *Transportation Research Board 93rd Annual Meeting*. 14-5367.

Technical Reports

Finio, Nicholas, Lung-Amam, Willow, Bedford, Brandon, Knaap, Gerrit, Dawkins, Casey, and **Knaap, Elijah**. 2018d. *Toward an Equitable Region: Lessons from Baltimore's Sustainable Communities Initiative*. Tech. rep. Columbia, MD: Enterprise Community Partners, Inc. https://www.enterprisecommunity.org/download?fid=9718%7B%5C&%7Dnid=6931.

Avin, Uri, Porter, Christopher, von Stroh, David, **Knaap, Elijah**, and Patnode, Paul. 2016a. *NCHRP 08-36: Sketch Planning Tools for Regional Sustainability*. Tech. rep. Cambridge, MA: Cambridge Systematics, Inc. http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP08-36(117)%7B%5C_%7DFR.pdf.

Pendall, Rolf, Hayes, Christopher, George, Arthur Taz, Mcdade, Zach, Dawkins, Casey, Jeon Sik, Jae, **Knaap, Elijah**, Blumenberg, Evelyn, Pierce, Gregory, and Smart, Michael. 2014a. *Driving to Opportunity: Understanding the Links among Transportation Access, Residential Outcomes, and Economic Opportuniy for Housing Voucher Recipients*. Tech. rep. March. Washington DC: Urban Institute, p. 68. https://www.urban.org/research/publication/driving-opportunity-understanding-links-among-transportation-access-residential-outcomes-and-economic-opportunity-housing-voucher-recipients.

Sartori, Jason, Knaap, Gerrit, Liu, Chao, Niu, Yi, Ding, Chengri, **Knaap, Elijah**, and Sandborn, Avery. 2012. *Challenges and Opportunities for Economic Prosperity in the 21st Century: Sustainable and Equitable Economic Development in Maryland*. Tech. rep. College Park, MD: National Center for Smart Growth Research & Education. http://smartgrowth.umd.edu/assets/documents/seed/seed%7B%5C_%7Dd1.pdf.

Software

Knaap, Elijah, Kang, Wei, Rey, Sergio, Wolf, Levi John, Cortes, Renan Xavier, and Han, Su. Nov. 2019. *geosnap: The Geospatial Neighborhood Analysis Package.* doi: 10.5281/ZENODO. 3526163. https://github.com/spatialucr/geosnap.

Cortes, Renan Xavier, **Knaap, Eli**, Rey, Sergio, Kang, Wei, Stephens, Philip, Wolf, Levi John, Härkönen, Antti, Gaboardi, James, and Arribas-Bel, Dani. July 2019. *pysal/segregation: Release 1.1.1 (bug fixes).* doi: 10.5281/ZENODO.3343074. https://github.com/pysal/segregation.

Kang, Wei, Rey, Sergio, Stephens, Philip, Malizia, Nicholas, Wolf, Levi John, Lumnitz, Stefanie, Gaboardi, James, Jlaura, Schmidt, Charles, **Knaap, Eli**, and Eschbacher, Andy. July 2019. *pysal/giddy: giddy 2.2.1.* doi: 10.5281/ZENODO.3351744. https://github.com/pysal/giddy.

Manuscripts in Progress

Ran Wei, Sergio Rey, & **Elijah Knaap**, "Efficient Regionalization for Spatially Explicit Neighborhood Delineation." *International Journal of Geographic Information Science.* Under Review.

Elijah Knaap, Levi Wolf, Sergio Rey, Su Han & Wei Kang, "Modeling Urban Neighborhoods: A Survey of Approaches for Identifying Socio-Spatial Structure." *Geography Compass.* Under Review.

Levi Wolf & **Elijah Knaap**, "Learning Geographical Manifolds: A Kernel Trick for Geographical Machine Learning." *Geographical Analysis.* Under Review.

Sergio Rey, Su Han, Wei Kang, **Elijah Knaap**, & Renan Cortes, "A Visual Analytics System for Space-Time Dynamics of Regional Income Distributions Utilizing Animated Flow Maps and Rank-based Markov Chains." *Geographical Analysis.* Under Review.

Wei Kang, Sergio Rey, Levi Wolf, **Elijah Knaap** & Su Han, "Neighborhood Change in the United States: A Comparison of Sequence Analysis Methods." *Computers, Environment, and Urban Systems.* Under Review.

Sergio Rey, Renan Xavier Cortes & **Elijah Knaap**, "Comparative Spatial Segregation Analytics." *Sociological Methodology.* Under Review.

Wei Kang, Sergio Rey, & **Elijah Knaap**, "Urban Income Mobility Patterns in the United States: 1980–2010." *Urban Studies.* Under Review.

Elijah Knaap, Levi Wolf, & Sergio Rey, "Machines Learn the Chicago School: Modeling Multidimensional Neighborhood Change as a Spatial Markov Process." *Urban Studies.* In Progress.

Elijah Knaap, Gerrit Knaap, Nicholas Finio & Sergio Rey, "Spatial Informatics for Measuring Urban Inequality in International Contexts." *In Progress.* .

awards Innovative Student Contribution to Planning Tools Award - Scenario Planning Applications Network (2015)

Outstanding Graduate Assistant Award - National Center for Smart Growth (2014)

Robert Janes Award for contribution to the field of Urban Studies - University of Maryland Dept. of Urban Studies and Planning (2012)

grants All S.T.A.R. fellowship, $10,000 fellowship from the University of Maryland Graduate School

URSP Course Development, $10,000 grant from UMD Department of Urban Studies and Planning. Course: Urban Planning Technology (with Chao Liu). 2012–2013.

URSP Course Development, $10,000 grant from UMD Department of Urban Studies and Planning. Course: Intermediate Geographic Information Systems (with Chao Liu). 2013–2014.

invited talks "The Geography of Neighborhood Change: Poverty, Immigration and Gentrification." Makeover Montgomery 3, Balancing Change in America's Suburbs. May 4, 2016.

"Retail Location and Transit: An Econometric Examination of Retail Location in Prince George's and Montgomery County." Transit, Development, and Forme Urbaine: Washington et Paris, Paris, France. March 14, 2015.

"The Promise and Challenge of Equitable Transit-Oriented Development in Diverse Suburbs." Transit, Development, and Forme Urbaine: Washington et Paris, Washington, DC. October 18, 2014.

conference talks "Comparing Spatial Inequality in International Contexts." Elijah Knaap, American Association of Geographers, Washington, D.C.. May, 2019.

"Modeling Neighborhoods Through Time & Space with Geosnap, The GeoSpatial Neighborhood Analysis Package." Elijah Knaap, Urban Affairs Association, Los Angeles, California. April, 2019.

"Spatio-temporal Analysis of Socioeconomic Neighborhoods." Sergio Rey & Elijah Knaap, 17th Python in Science Conference, Austin, Texas. July, 2018.

"Machines Learn the Chicago School: Spatiotemporal Markov Models of Neighborhood Change." Elijah Knaap & Nicholas Finio, Association of Collegiate Schools of Planning, Denver, Colorado. October, 2017.

"The Cartography of Opportunity: Spatial Data Science for Equitable Urban Policy." Elijah Knaap, American Association of Geographers, Boston, Massachusetts. April, 2017.

"Who Moves to Opportunity? Residential Sorting Models from a Unique Housing Mobility Program in Baltimore." Elijah Knaap, Association of Collegiate Schools of Planning, Portland, Oregon. November, 2016.

"Regional Planning, Access to Opportunity, & Freddie Gray: Lessons from Baltimore." Gerrit Knaap, Elijah Knaap, Nick Finio, Casey Dawkins, Willow Lung-Amam, Association of Collegiate Schools of Planning, Portland, Oregon. November, 2016.

"Opportunity, Transportation, and Neighborhood Choice: A Quantitative Examination of Housing Voucher Use in Baltimore." Elijah Knaap, Association of Collegiate Schools of Planning, Houston, Texas. October, 2015.

"Networks and Neighborhood Effects: The Role of Accessibility in Economic Mobility." Elijah Knaap & Casey Dawkins, Federal Reserve System Community Development Research Conference, Washington D.C.. April 3, 2015.

"Improving Social and Economic Equity in Maryland." Chao Liu, Elijah Knaap & Gerrit Knaap, 14th Annual New Partners for Smart Growth Conference Tech Fair, Baltimore, Maryland. January 3, 2015.

"Trajectories of Neighborhood Attainment: Evidence from MTO in Baltimore." Elijah Knaap, Association of Collegiate Schools of Planning, Philadelphia, Pennsylvania. October, 2014.

"The Use and Misuse of Opportunity Maps." Elijah Knaap & Chao Liu, Association of Collegiate Schools of Planning, Philadelphia, Pennsylvania. October, 2014.

"Identifying Maryland Transportation Place Types." Chao Liu, Ting Ma, Elijah Knaap, & Gerrit Knaap, Association of Collegiate Schools of Planning, Philadelphia, Pennsylvania. October, 2014.

"Opportunity Mapping Tools to Improve Social and Economic Equity in Maryland." Elijah Knaap, Chao Liu, & Gerrit Knaap, Makeover Montgomery II, Silver Spring, Maryland. October, 2014.

"Locating the Most Connected Transit Stop, Route, and Transfer Center: Tool for Users and Decision Makers." Mishra, S., Welch, T. F., Torrens, P. M., Zhu, H., & Knaap, E., Transportation Research Board 93rd Annual Meeting, Washington D.C.. October, 2014.

"Opportunity Mapping: A Conceptual Analysis and Application to the Baltimore Metropolitan Area." Chao Liu, Elijah Knaap & Gerrit Knaap, Annual Conference of the Association for Public Policy Analysis & Management, Washington D.C.. 2013.

"Opportunity Mapping: Concepts and Techniques." Elijah Knaap, Chao Liu, & Gerrit Knaap, Joint Meeting of the Association of Collegiate Schools of Planning & Association of European Schools of Planning, Dublin, Ireland. 2013.

"Reclassification of Sustainable Neighborhoods: An Opportunity Indicator Analysis in Baltimore Metropolitan Area." Chao Liu, Elijah Knaap, & Gerrit Knaap, Joint Meeting of

the Association of Collegiate Schools of Planning & Association of European Schools of Planning, Dublin, Ireland. 2013.

"Economic Clusters and Transit Oriented Development: Two for the Price of One." Elijah Knaap, Yi Niu, Chengri Ding, Sabyasachee Mishra, Tim Welch, Annual Meeting of the Association of Collegiate Schools of Planning & Association, Cincinnati, Ohio. 2012.

"Improving Opportunity Accessibility for Underserved Populations: A Sustainable and Equitable Economic Development (SEED) Initiative for the State of Maryland." Chao Liu, Gerrit Knaap, Jason Sartori & Elijah Knaap, Annual Meeting of the Association of Collegiate Schools of Planning & Association, Cincinnati, Ohio. 2012.

courses taught

UPP 461: GIS for Urban Planners	Fall 2017
URSP 688Y: Smart Cities and Urban Data Science	Spring 2017
URSP 688Q: Intermediate GIS (Co-Taught with Chao Liu)	Spring 2014
URSP 688G: Urban Planning Technology; (Co-Taught with Chao Liu)	Fall 2014
URSP 688G: Urban Planning Technology; (Co-Taught with Chao Liu)	Spring 2013

public history

Selected media coverage

Baltimore's Housing Voucher Program Almost Gets It Right - *CityLab*, January 5, 2016

Defining 'opportunity' in Baltimore - *The Baltimore Sun*, August 3, 2015

service

Service to the Profession

Member: American Association of Geographers	2013 -
Member: Association of Collegiate Schools of Planning	2013 -
Member: American Sociological Association	2015 -
Member: Regional Science Association International	2018 -
Peer Reviewer: NSF – Methodology, Measurement, & Statistics Program	2019 -

computing

Programming

Python, R, Git, HTML5/CSS, LaTeX, Postgresql/PostGIS, STATA, Javascript

Geographic Information Systems

ArcGIS, QGIS, GeoDa, STARS, PySAL, GeoPandas, sf, spdep