

# JONATHAN K. NELSON

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## EDUCATION

- 2019      **Ph.D., Geography** (with minor in Social Data Analytics)  
Dissertation: *Role of Cartography, Design & Visualization in Making Personal Movement Data More Accessible, Legible, Valuable*  
Pennsylvania State University
- 2015      **M.S., Geography**  
Thesis: *Characterizing relationships between data aggregation and spatial scale: exploratory analysis of the Modifiable Areal Unit Problem*  
Pennsylvania State University
- 2012      **B.S., Geography** (Summa Cum Laude)  
Honors Thesis: *Jim Crow Alive and Well in U.S. Marijuana Law Enforcement*  
University of New Mexico

## FIELDS OF SPECIALIZATION

cartography & data visualization; GIScience; geovisual analytics; multiscale representation; user centered/experience design; applications in: environmental science, fitness & health, politics, socioeconomics, transportation and urban planning

## POSITIONS HELD

- **Assistant Research Professor of Geography** (Fall 2020-) | Penn State
- **Associate Director, Center for Environmental Informatics** (Fall 2020-) | Penn State
- **Geographic Information Scientist** (Spring 2018-Fall 2020) | Vermont Agency of Transportation
- **Instructor** (Spring 2018) | Pennsylvania State University World Campus
- **Geovisualization & User Experience Designer** (Summer 2015-Spring 2018) | Strava Metro
- **Teaching and Research Assistant** (Fall 2013-Spring 2015) | Penn State
- **Cartographer** (Summer 2012-Spring 2013) | National Geographic Society
- **GIS Technician** (Spring 2011-Summer 2012) | Earth Data Analysis Center, Univ. of NM

## JOURNAL ARTICLES

- **Nelson, J.K.**, & MacEachren, A.M. (under review). "Cartographic Design Approach to Leveraging Aggregated Personal Movement Data." *submitted to Cartographic Perspectives*.
- Almutairy, F., Alshaabi, T., **Nelson, J.K.**, & Wshah, S. (2019). "ARTS: Automotive Repository of Traffic Signs for the United States." *IEEE Transactions on Intelligent Transportation Systems* (early access): 1-9.
- **Nelson, J.K.** & Shih, P.C. (2017). "CompanionViz: Mediated platform for gauging canine health and enhancing human-pet interactions." *International Journal of Human-Computer Studies* (98): 169-178.
- **Nelson, J.K.** & Brewer, C.A. (2017). "Evaluating data stability in aggregation structures across spatial scales: revisiting the modifiable areal unit problem." *Cartography and Geographic Information Science* (44): 35-50.

- **Nelson, J.K.**, Quinn, S., Swedberg, B., Chu, W., & MacEachren, A.M. (2015). "Geovisual Analytics Approach to Exploring Public Political Discourse in Twitter." *ISPRS International Journal of Geo Information* (4): 337-366.
- Robinson, A.C., & **Nelson, J.K.** (2015). "Evaluating Maps in a Massive Open Online Course." *Cartographic Perspectives* (80): 6-17.

## REFEREED CONFERENCE & WORKSHOP PROCEEDINGS

- **Nelson, J.K.** (2019) Cartography of the Quantified-Self: making sense of large-scale bicycling behavior patterns in urban planning contexts. *CityVis: 2nd Workshop on Urban Data Visualization, IEEE Vis 2019*. Vancouver, BC, October 20-25.
- **Nelson, J.K.** & Robinson, A.C. (2015) Understanding Map Design in the Context of a Massive Open Online Course in Cartography. *27th International Cartographic Conference*. Rio de Janeiro, Brazil, August 23-28.
- **Nelson, J.K.** (2014). Characterizing relationships between data aggregation and spatial scale: exploratory analysis of the Modifiable Areal Unit Problem. *Eighth International Conference on Geographic Information Science*. Vienna, Austria, September 23-26.

## REPORTS TO SPONSOR

- Savelyev, A., MacEachren, A.M., Pezanowski, S., Karimzadeh, M., Luo, W., **Nelson, J.K.**, & Robinson, A.C. (2014). *Report on New Methods for Representing and Interacting with Qualitative Geographic Information, Stage 2: Task Group 4 Message-Focused Use Case*. Pennsylvania State University, State College, PA.

## PRESENTATIONS & POSTERS

- **Nelson, J.K.** (2019) "Cartography of the Quantified-Self: making sense of large-scale bicycling behavior patterns." Poster for *IEEE Vis 2019*. Vancouver, BC, October 20-25.
- **Nelson, J.K.** & Devaney, B. (2016). "Innovative Technology: Improving Bicycling, Walking and Transit." Panel Presentation for *2016 Moving Together Conference*. Boston, MA, September 29.
- **Nelson, J.K.** (2015). "Mapping Local Spatial Fitness with Strava." Presentation for *Annual Meeting of the North American Cartographic Information Society*. Minneapolis, MN, October 13-17.
- **Nelson, J.K.**, Quinn, S., Swedberg, B., Chu, W., Houchen, M., Bodnar, T., & MacEachren, A.M. (2015). "SPoTvis: Geovisualization Tool for Exploring Spatial Patterns in Public Political Discourse." Poster for *BDSS IGERT Research Poster Session*. Pennsylvania State University, State College, PA, April 10.
- **Nelson, J.K.**, Quinn, S., Swedberg, B., Chu, W., Houchen, M., Bodnar, T., & MacEachren, A.M. (2014). "SPoTvis: A Geovisual Analytics Tool for Discovering Multi-Scale Spatial Patterns in Tweets Surrounding the 2013 US Government Shutdown." Presentation for *Annual Meeting of the North American Cartographic Information Society*. Pittsburgh, PA, October 8-11.
- **Nelson J.K.** (2014). "2014 Tour de France Wall Map." Poster for *Annual Meeting of the North American Cartographic Information Society*. Pittsburgh, PA, October 8-11.
- **Nelson, J.K.** & Brewer, C.A. (2014). "Exploring Across-Scale Relationships in Spatially Aggregated Data: Informing the Modifiable Areal Unit Problem." Poster for *Annual Meeting of the North American Cartographic Information Society*. Pittsburgh, PA, October 8-11.

## PUBLISHED MAPS & GRAPHICS

- **Nelson, J.K.** (2013). "Seattle Citywide Skatepark Plan." In: Making Urban Politics Go Away: The role of legally mandated planning processes in occluding city-level power (Dr. J.N. Carr). Invited, peer reviewed book chapter for *Urban Politics: Critical Approaches*. Sage.
- **Nelson, J.K.**, Gibbons, D., Ibinson, J., & Wardley, R. (2013). "Appalachian Trail." National Geographic Maps. Washington, D.C.
- **Nelson, J.K.** (2013). "Plate Tectonics" (p. 44); "Continental Drift" (p. 54); "A Typical Trek" (p. 62-63); "Life and Death on Everest" (p. 205). In: *The Call of Everest* (Conrad Anker). National Geographic Society. Washington, D.C.
- **Nelson, J.K.**, Gibbons, D., Ibinson, J., & Wardley, R. (2013). "Texas Hill Country Destination Map Guide." National Geographic Maps. Washington, D.C.
- **Nelson, J.K.** (2012). "Reconstructing Amelia Earhart's Flightpath." In: *National Geographic Magazine: Exploring History*. National Geographic Magazine Collectors Edition Winter 2012. Washington, D.C.
- **Nelson, J.K.** (2012). "Oaxaca, Mexico." In: *Revealing Artifacts: Archaeological Replicas, Art, and Cultural Production in Oaxaca, Mexico* (Dr. R.L. Brulotte). University of Texas Press. Austin, TX.
- **Nelson, J.K.** (2011). "Map of the World, Circa 2525." In: *Mutant Hunter: Legends of the Fallout* (Stephen R. Cox).

## SCHOLARSHIPS & AWARDS

- 2015 Cartography E. Willard Miller Award in Geography (\$400)
- 2014 North American Cartographic Information Society (NACIS) Travel Grant to speak at the NACIS Conference, Pittsburgh, Pennsylvania, October 2014 (\$200)
- 2014 Penn State Department of Geography Gould Center Travel Grant to speak at the NACIS Conference, Pittsburgh, Pennsylvania, October 2014 (\$500)
- 2014 Penn State Department of Geography GeoVISTA Center Travel Grant to speak at the GIScience Conference, Vienna, Austria, September 2014 (\$600)
- 2014 NSF IGERT Big Data-Social Science Traineeship (Fall 2014 - Summer 2015), <http://bdss.psu.edu> (\$30,000 stipend over one year plus additional travel funding)
- 2014 Doctor of Philosophy Paper E. Willard Miller Award in Geography (\$400)

## GRANTS

- Detection and Mapping of Roadside Assets from Roadway Images. (2018-2021). Safwan Wshah, PI (University of Vermont); Jonathan K. Nelson, State Liaison (Vermont Agency of Transportation).
- Radio Frequency Identification (RFID) Technology for Transportation Signage Management. (2018-2020). Tian Xia, PI with Byung Lee, Co-PI (University of Vermont); Jonathan K. Nelson, State Liaison (Vermont Agency of Transportation).

## TEACHING EXPERIENCE

- **Instructor** | Pennsylvania State University World Campus  
Online Course Title: *Mapping Our Changing World*.
- **Teaching Assistant** | Penn State  
Massive Open Online Course Title: *Maps and the Geospatial Revolution*.  
Resident Course Title: *Geography of the Developing World*.  
Resident Course Title: *Spatial Statistics*.

## **PROFESSIONAL ASSOCIATIONS**

- Association of American Geographers
- Cartography and Geographic Information Society
- North American Cartographic Society
- Technical Advisory Committee, Vermont Agency of Transportation, Research Section

## **REVIEWER SERVICE**

- Annals of the American Association of Geographers
- Journal of Location Based Services

(revised September 2020)

“A map is the greatest of all epic poems. Its lines and colors show the realization of great dreams.”

- Gilbert H. Grosvenor