Lily Houtman
cartographer and web developer

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pronouns: they/them

RESEARCH INTERESTS

mobile and web cartography, data journalism, science communication, UI/UX design, queer+trans theory

EDUCATION

The Pennsylvania State University   2024-present
Ph.D. Geography
Advisor: Anthony C. Robinson
Committee: Cynthia Brewer, Mark Ortiz, Pamela VanHaitsma
Dissertation: *Evaluating the Production and Use of Mobile and Responsive Thematic Maps* (Forthcoming)

The Pennsylvania State University   2022-2024
M.S. Geography
Advisor: Anthony C. Robinson
Committee: Cynthia Brewer and Helen Greatrex
Thesis: *Mobile Thematic Map Design in Data Journalism: An Evaluation of Techniques, Challenges, and Opportunities*

University of Wisconsin – Madison   2018-2022
B.S. Cartography and GIS (Honors)
Advisor: Robert E. Roth
Thesis: *Mapping Presidential Elections: An Empirical Analysis of Effective Design Techniques*
B.S. Human Geography
B.S. Anthropology
Certificate in Archaeology
Dean's List: Fall 2018-Spring 2022

RESEARCH PROJECTS

Evaluating the Production and Use of Mobile and Responsive Thematic Maps   2024-present
The Pennsylvania State University PhD Dissertation
Advisor: Dr. Anthony Robinson
To answer the question "what is mobile-first thematic map design?" I will conduct a literature review, conduct focus groups with young adults (18-35) to understand how they read mobile thematic news maps, and conduct an *in situ* usability study with expert adult users of the mobile beekeeping tool *Beescape NexGen*. The results will be written up as my PhD dissertation.

Designing Non-Binary Maps to Reimagine Borderlands   2024-present
The Pennsylvania State University – Department of Geography
PI: Dr. Melissa W. Wright
Recognizing the role of cartography in defining borders, we develop maps that consider the Rio Grande region from the constantly moving perspective of the watershed. We practice a non-binary

epistemology without borders. We present our maps which play with cartographic conventions related to color and minimalism. We highlight how rail, river, and road networks defy, remove, and reimagine borders.

Beescape NexGen Geovisualization Tool   2022-present
The Pennsylvania State University – Departments of Geography and Entomology
PIs: Dr. Christina Grozinger and Dr. Anthony Robinson

Beescape is a [decision support tool](#) to assess the quality of the landscapes for supporting pollinators. I develop the mockups for the interactive interface, develop and analyze questions for a user study, design a printable version of the tool, and assist with bug testing and fixing. We are currently developing a mobile version of the tool.

Harm Mapping: Visualizing Sexual Harassment at Lafayette College   2023-2024
The Pennsylvania State University and Lafayette College
PI: Dr. Dana Cuomo

Researchers at Lafayette College collected data on instances of student sexual harassment on their campus. I use my cartographic skills to design a series of maps to display this data visually using insight from feminist and critical cartography. The maps will be used to argue for policy changes.

At the Intersection of Mobile Mapping, Thematic Cartography, & Data Journalism   2022-2024
The Pennsylvania State University Master's Thesis
Advisor: Dr. Anthony Robinson

Mobile devices are increasingly used in every part of daily life. Most research on mobile map design has focused on reference maps; mobile thematic maps are understudied. Mobile-first design must be a priority in research, and is the focus of my master's thesis.

Mapping Presidential Elections: An Empirical Analysis of Effective Design Techniques 2020-2022
University of Wisconsin – Madison Undergraduate Senior Honors Thesis
Advisor: Dr. Robert Roth

Based on academic literature and design choices implemented by major news organizations for the 2020 election, I evaluate the role of thematic map type, color saturation, and visual accenting of swing states in United States presidential election maps through an empirical user study.

Mapping for a Sustainable World: QGIS technical supplement   2021-2022
University of Wisconsin – Madison Cartography Lab
Advisor: Dr. Robert Roth

Design a [set of open-source QGIS technical mapping tutorials](#) to support instruction about cartographic design. The technical tutorials directly supplement the joint International Cartographic Association and United Nations publication *Mapping for a Sustainable World*.

PUBLICATIONS

Roth, RE, A Iverson, A Kagawa, G Le Sourd, B Ricker, T Andersen, G Baldrica-Franklin, **L Houtman**, F Ilunga, M Lee, M-J Kraak. 2025 Making and remaking Mapping for a Sustainable World: a retrospective and prospective analysis as a case study in Processual Cartography. *International Journal of Cartography,* p. 1-40.

Houtman, L, AC Robinson, D McLaughlin, and C Grozinger. 2025. Evaluating the Usability and Utility of a Spatial Decision Support System for Pollinator Ecology. *Ecological Informatics, 89,* p. 1-12.

Houtman, L. 2025. Techniques, Challenges, and Opportunities in Mobile Thematic Map Design for Data

Journalism. *Cartography and Geographic Information Science,* p. 1-20.

Houtman, L, D Cuomo, M Dennehy, M Forman, A Zea, and S Hannan. 2025. The Harm Mapping Project: Navigating Ethics and Collaboration in Map Design. *Cartographic Perspectives*, *104,* p. 27-33.

Houtman, L. 2024. Review of The Art of Insight: How Great Visualization Designers Think. *Cartographic Perspectives, 104,* p. 70-73.

Houtman, L. 2024. Future opportunities for mobile thematic map design in data journalism. *Abstracts of the ICA, 7*, p. 59.

Houtman, L. 2024. Review of Airline Maps: A Century of Art and Design. *Cartographic Perspectives, 103,* p. 99-102.

Houtman, L. 2023. At the Intersection of Mobile Thematic Cartography and Data Journalism. *Abstracts of the ICA, 6*, p. 93.

Robinson AC, TJ Prestby, D McLaughlin, **L Houtman**, P Dudas, and C Grozinger. 2023. Geovisualization for Pollinator Decision Support with Beescape NexGen. *Abstracts of the ICA, 6*, p. 212.

Song Z, RE Roth, **L Houtman**, T Prestby, A Iverson, and S Gao. 2023. Visual storytelling with maps: An empirical study on story map themes and narrative elements, visual storytelling genres and tropes, and individual audience differences. *Cartographic Perspectives, 100,* pp. 10-44.

Houtman L. 2022. Mapping US Elections: An Empirical Analysis of Design Techniques. *Abstracts of the ICA, 5*, p. 126.

Houtman L. and RE Roth. 2021. Introducing a QGIS Technical Supplement for *Mapping for a Sustainable World*. *Abstracts of the ICA, 3,* p. 113.

Houtman L, and RE Roth, 2021. *Mapping for a Sustainable World: QGIS technical supplement.* Version 1.0 The University of Wisconsin Cartography Lab: Madison, WI. DOI: [10.5281/zenodo.5585647](#)

Roth RE, CM Sack, G Baldrica-Franklin, Y Chen, R Donohue, **L Houtman**, T Prestby, R Tolochko, and N Underwood, 2021. Introducing Web Mapping: A Workbook for Interactive Cartography and Visualization on the Open Web. *Abstracts of the ICA*, *3*, p. 254.

Roth RE, CM Sack, G Baldrica-Franklin, Y Chen, R Donohue, **L Houtman**, T Prestby, R Tolochko, and N Underwood, 2020. *Web Mapping: A Workbook for Interactive Cartography and Visualization on the Open Web*. Version 1.0. University of Wisconsin Cartography Laboratory: Madison, WI. DOI: [10.5281/zenodo.4685763](#)

ORAL PRESENTATIONS

Houtman, L., Wright, M.W. "An Exercise in Non-Binary Maps" *presented at* the American Association of Geographers Annual Meeting. March 2025. Detroit, Michigan.

Houtman, L. "The Challenges and Opportunities of Designing News Maps for Mobile Devices" *presented at* the Computation and Journalism Symposium. October 2024. Boston, Massachusetts.

Houtman, L. "Discussing Current Limits and Future Opportunities in Mobile Map Design" *presented at* the 44th meeting of the North American Cartographic Information Society (NACIS). October 2024. Tacoma, Washington.

Houtman, L. "Future Opportunities for Mobile Thematic Map Design in Data Journalism" *presented at* EuroCarto. September 2024. Vienna, Austria.

Houtman, L. "Using Beescape NexGen: A Pollinator Health Decision-Support Tool" *presented at* the Technologies for Agriculture and Living Systems Symposium. May 2024. State College, Pennsylvania.

Houtman, L. "Mobile Thematic Cartography: Interviews on Design and Practice" *presented at* the American Association of Geographers Annual Meeting. April 2024. Virtual.

Houtman, L. "How Should We Design Mobile Thematic Maps" *presented at* the 43rd meeting of the North American Cartographic Information Society (NACIS). October 2023. Pittsburgh, Pennsylvania.

Houtman, L."At the Intersection of Mobile Thematic Cartography and Data Journalism" *presented at* the 31st International Cartographic Conference (ICC). August 2023. Cape Town, South Africa.

Houtman, L."The Challenges of Using AI to Promote Further Learning in Cartographic Education" *presented at* the Pre-Conference Workshop on Cartography and AI at the 31st International Cartographic Conference (ICC). August 2023. Stellenbosch, South Africa.

Houtman, L., Prestby, T.J., McLaughlin, D., Robinson, A.C., & Grozinger, C."Designing Beescape NexGen: A Geovisualization Tool to Support Pollinator Health" *presented at* the American Association of Geographers Annual Meeting. March 2023. Denver, Colorado.

Houtman, L. "How Should We Design Election Maps" *presented at* the 42nd meeting of the North American Cartographic Information Society (NACIS). October 2022. Minneapolis, Minnesota.

Houtman, L. "Mapping US Elections: An Empirical Analysis of Design Techniques" *presented at* EuroCarto. September 2022. Vienna, Austria.

Houtman, L. "Mapping Presidential Elections: An Empirical Analysis of Effective Design Techniques" *presented at* the American Association of Geographers (AAG) Annual Meeting. March 2022. Virtual.

Houtman, L., Roth R.E."Introducing a QGIS technical supplement for Mapping for a Sustainable World" *presented at* the 30th International Cartographic Conference (ICC). December 2021. Florence, Italy.

POSTER PRESENTATIONS

Houtman, L. "The Challenges and Constraints of Designing Mobile News Maps for Science Communication" *presented at* the Viral Movements Symposium. May 2024. State College, Pennsylvania.

Houtman, L. "Evaluating the Use and Production of Mobile News Maps" *presented at* the Pennsylvania State University College of Earth and Mineral Sciences NSF GRFP Poster Session. October 2023. State College, Pennsylvania.

Houtman, L. "Mapping Presidential Elections: An Empirical Analysis of Effective Design Techniques" *presented at* the 41st meeting of the North American Cartographic Information Society (NACIS). October 2021. Oklahoma City, Oklahoma.

Houtman, L. "Human Evolution in the East African Rift Valley" *presented at* the 41st meeting of the North American Cartographic Information Society (NACIS). October 2021. Oklahoma City, Oklahoma.

PANEL DISCUSSIONS

Panelist, "LGBTQ+ in STEM Leading the Way" *at* The Pennsylvania State University. April 2025. State College, Pennsylvania.

Panelist, "The Future of University Cartography Labs 2: Student Experience and Creating New Spaces" *at* the American Association of Geographers Annual Meeting. April 2024. Virtual.

Panelist, "Diversity, Equity, and Inclusion II: Queer Cartography" *at* the 43rd meeting of the North American Cartographic Information Society (NACIS). October 2023. Pittsburgh, Pennsylvania.

Co-Moderator (*with* F.M. Kim), "Finding Queerness in GIS and Cartography" *at* the American Association of Geographers Annual Meeting. March 2023. Denver, Colorado.

ORGANIZED WORKSHOPS and SESSIONS

Co-Organizer (*with* Robert E. Roth, et al.), "T/U(X)W Design Challenge" *at* the Technical University of Vienna (TU Wien). May 2025. Virtual.

Co-Organizer (*with* Gareth Baldrica-Franklin), "Critical Cartographic Processes" *at* the American Association of Geographers Annual Meeting. March 2025. Detroit, Michigan.

Co-Organizer (*with* Gareth Baldrica-Franklin), "Unmapping: Creative and Critical Cartography for All", NACIS Commons *at* the 44th meeting of the North American Cartographic Information Society (NACIS). October 2024. Tacoma, Washington.

Co-Organizer (*with* Zhaoxu Sui), "Putting the Human back in Cartography: Designs and Practices" *at* the American Association of Geographers Annual Meeting. April 2024. Virtual.

Co-Organizer (*with* Gareth Baldrica-Franklin), "Unmapping: Creative and Critical Cartography for All", NACIS Commons *at* the 43rd meeting of the North American Cartographic Information Society (NACIS). October 2023. Pittsburgh, Pennsylvania.

Co-Organizer (*with* F.M. Kim), "Finding Queerness in GIS and Cartography" *at* the American Association of Geographers Annual Meeting. March 2023. Denver, Colorado.

TEACHING EXPERIENCE

Guest Lecturer on Multivariate Cartography   Spring 2025
Department of Geography, The Pennsylvania State University
      GEOG 361 - Introduction to Cartography (*with* Tim Prestby)

Curriculum Developer for Online Geospatial Education   Fall 2024
Online Geospatial Education Program, The Pennsylvania State University
      GEOG 486 - Cartography and Visualization (*with* Fritz Kessler and Marcela Suárez)

Guest Lecturer on Thematic Cartography   Fall 2023
Department of Geography, The Pennsylvania State University
      GEOG 6N - Maps and the Geospatial Revolution (*with* Anthony Robinson)

Guest Lecturer on Feminist Cartography   Spring 2023
Department of Women, Gender, and Sexuality Studies, The Pennsylvania State University
      WMNST 197 - Creating Safer Campuses (*with* Jill Wood)

Undergraduate Teaching Intern: Interactive Cartography   Fall 2021
Department of Geography, University of Wisconsin-Madison
      Geography 575 - Interactive Cartography and Geovisualization (*with* Robert. E
      Roth & Gareth Baldrica-Franklin)

Undergraduate Teaching Intern: Introduction to Cartography   Fall 2021
Department of Geography, University of Wisconsin-Madison
      Geography 370 - Introduction to Cartography (*with* Robert E. Roth & Alicia Iverson)

HONORS and AWARDS

$50	**No Boundaries Symposium Award for Best Paper (Third Place)**	2025
	Penn State University, Department of Geography	
$1,500	**Penn State Graduate Student International Travel Grant**	2025
	Penn State Global	
$500	**Myers Award for Excellence in Cartographic Design**	2025
	Penn State University, Department of Geography	
$1,500	**Doctoral Student Scholarship Award**	2024
	Cartography and Geographic Information Society (CAGIS)	
$300	**Master's Thesis Research Grant**	2024
	Cartography and Mapping Speciality Group of the AAG	
$500	**NACIS Student Travel Grant**	2024
	North American Cartographic Information Society	
$111,000	**Graduate Research Fellowship (GRFP)**	2024-2027
	National Science Foundation (NSF)	
$5,000	**Penn State EMS NSF GRFP Proposal Poster Competition**	2023
	Penn State College of Earth and Mineral Sciences	
$500	**NACIS Student Travel Grant**	2023
	North American Cartographic Information Society	
$200	**NACIS Diversity, Equity, and Inclusion Travel Grant**	2023
	North American Cartographic Information Society	
$2,700	**USNC Early Career Scholar Funding for Participation at ICC**	2023
	US National Committee for the ICA	
$600	**ICA Young Scholars Funding for Participation at ICC**	2023
	Executive Committee of the ICA	
$5,000	**Fund for Excellence in Graduate Recruitment (FEGR)**	2022-2023
	The Pennsylvania State University	
$500	**NACIS Student Travel Grant**	2022
	North American Cartographic Information Society	
$100	**Excellence in the Department of Geography**	2022
	University of Wisconsin – Madison	
$100	**Achievement in in the Cartography/GIS Major**	2022
	University of Wisconsin – Madison	
$9,000	**Letters & Science Honors Mark Mensink Senior Honors Thesis Grant**	2021-2022
	University of Wisconsin – Madison	
$4,000	**McPherson Eye Research Institute Undergraduate Research Fellowship**	2021-2022
	University of Wisconsin – Madison	
$2,000	**USNC Early Career Scholar Funding for Participation at ICC**	2021

US National Committee for the ICA

$50	**Barbara Bartz Petchenik Award for Cartographic Design (First Place)**	2021
	University of Wisconsin – Madison	
$1,000	**Department of Geography Kohn Award**	2021
	University of Wisconsin – Madison	
$50	**Barbara Bartz Petchenik Award for Cartographic Design (Second Place)**	2020
	University of Wisconsin – Madison	

SERVICE and LEADERSHIP

Co-Moderator (with Gareth Baldrica-Franklin), Practical Cartography Day — 2025
North American Cartographic Information Society (NACIS)

NACIS Board Member — 2024-present
North American Cartographic Information Society (NACIS)

NSF GRFP Workshop Peer Mentor — 2024-present
College of Earth and Mineral Sciences, The Pennsylvania State University

Coffee Hour Committee Member — 2024-present
Department of Geography, The Pennsylvania State University

Co-Moderator (with Nat Douglass), Practical Cartography Day — 2024
North American Cartographic Information Society (NACIS)

Justice, Equity, Diversity, and Inclusion (JEDI) Student Representative — 2023-present
American Association of Geographers (AAG)

Supporting Women in Geography (SWIG) President — 2023-present
Department of Geography, The Pennsylvania State University

Graduate Student Representative — 2023-2024
Department of Geography, The Pennsylvania State University

Supporting Women in Geography (SWIG) Board Member — 2022-2023
Department of Geography, The Pennsylvania State University

Coffee Hour Committee Member — 2022-2023
Department of Geography, The Pennsylvania State University

Social Media Coordinator and Board Member — 2021-2022
Geography Club, University of Wisconsin-Madison

External Relations Committee Undergraduate Student Representative — 2021-2022
Department of Geography, University of Wisconsin-Madison

LABORATORY and PROFESSIONAL EXPERIENCE

Graduate Student Cartographer — 2023-present
Geographics Lab, Department of Geography, The Pennsylvania State University

Web Development Intern — 2021-2022
United States Geological Survey, Web Mapping and Informatics Team

Undergraduate Student Cartographer — 2020-2022
Cartography Lab, Department of Geography, University of Wisconsin-Madison

TECHNICAL SKILLS

Web Development and Cartography
- JavaScript *(including Leaflet and D3 map libraries)*
- HTML/CSS/SCSS

- FrontEnd Frameworks *(Bootstrap, Vue)*
- ESRI Suite *(ArcGIS JS API, ArcGIS Pro, AGOL, StoryMaps)*
- QGIS
- Git/GitHub

Data Visualization and Analysis
- Adobe Creative Cloud *(Illustrator, Photoshop, InDesign)*
- R and RStudio
- Tableau
- Blender
- Microsoft Excel

MEMBERSHIPS

Cartography and Geographic Information Society (CaGIS)   2024-present

American Association of Geographers (AAG)   2021-present

International Cartographic Association (ICA)   2021-present

The Phi Beta Kappa Society (PBK)   2021-present

North American Cartographic Information Society (NACIS)   2020-present