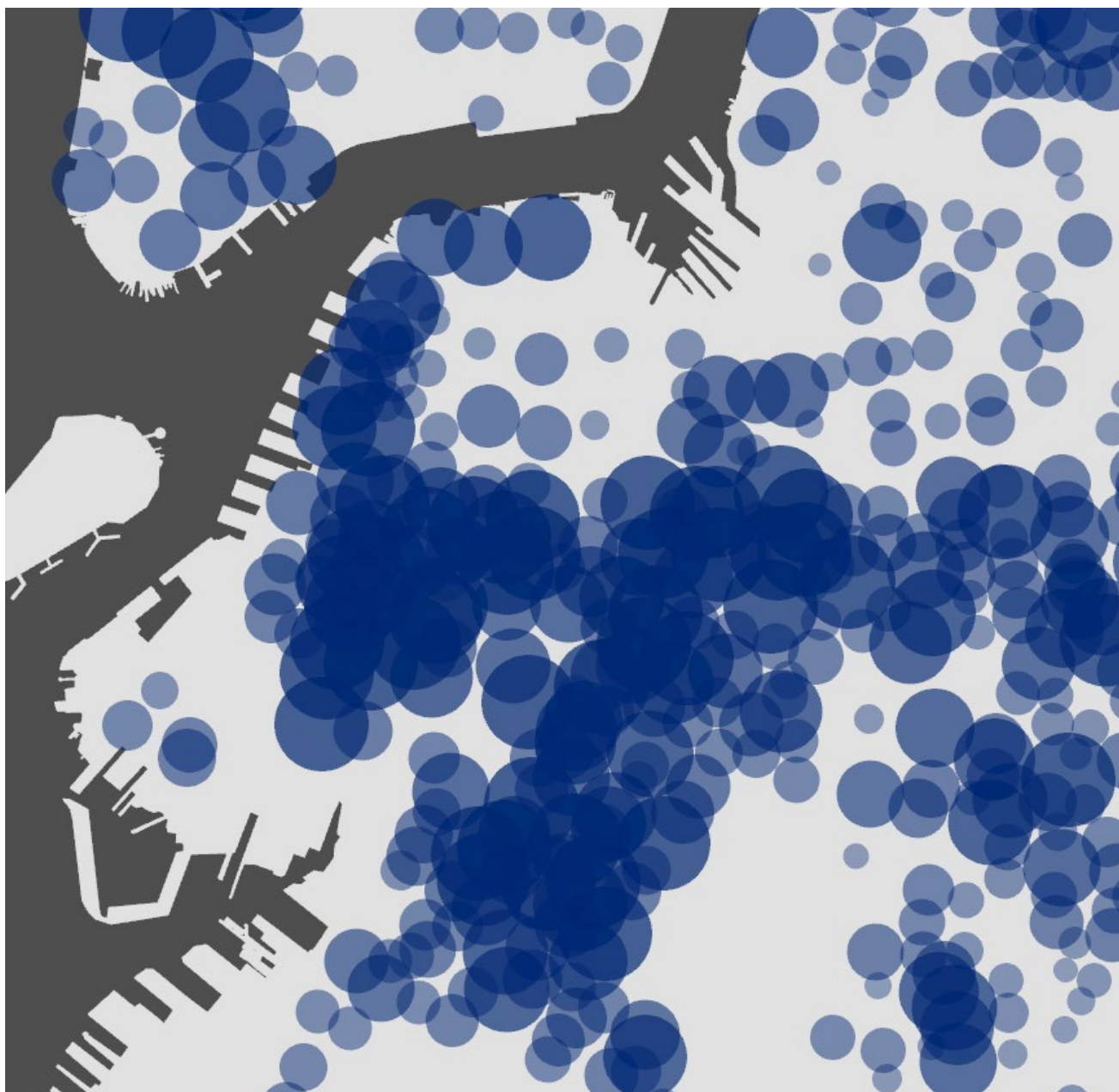


Spatial Analysis and Visualization Initiative

Annual Report: FY 2023



Executive Summary

The Spatial Analysis and Visualization Initiative (SAVI) is a mapping and data analysis research center at Pratt Institute. We use geographic information science (GIS) to analyze urban communities and environments, and design to tell stories with data. Our mission is to advance geospatial data literacy and scholarship at Pratt Institute. To do that, the center maintains a portfolio of activities including both internal academic service and externally funded research.

In the 2023 fiscal year, we managed eight grants and service contracts totaling \$353,000 in external funding. We also maintained a diverse portfolio of instructional activities, supporting 79 students enrolled in GIS and data related courses, 14 faculty with GIS-related research, and 430 GIS users in the Pratt community.

This year was a moment of transition for SAVI, as the center hired a new director and moved into new facilities at The Research Yard. A top priority was reinvigorating the center's relationship with Pratt faculty and students – and reimagining how the center can contribute to the academic mission of the Institute. We established an affiliated faculty group (now including six faculty members from three Schools), recruited and mentored a team of five graduate research assistants, defined a research agenda, and drafted a strategic plan.

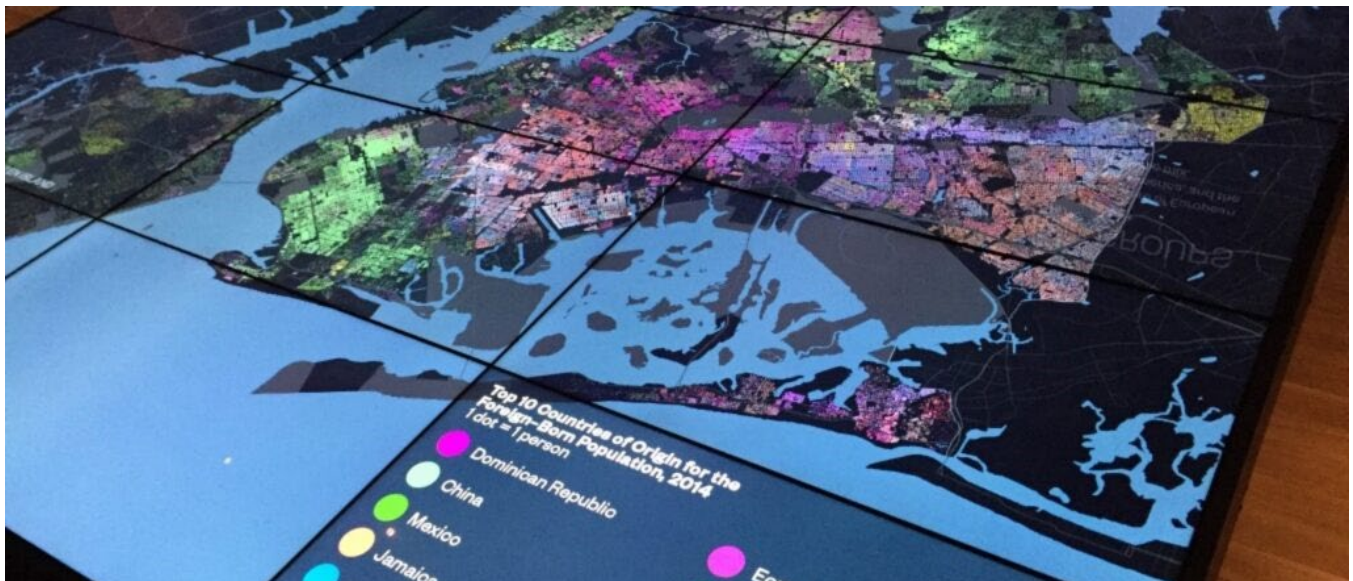
Background

Mission and Goals

The Spatial Analysis and Visualization Initiative (SAVI) is a mapping and data analysis research center at Pratt Institute. We use geographic information science (GIS) to analyze urban communities and environments, and design to tell stories with data. Our mission is to advance geospatial data literacy and scholarship at Pratt Institute.

More specifically, the center's activities focus on five programmatic goals:

- Produce academic research related to spatial analysis and visualization.
- Advance interdisciplinary and community-based scholarship related to spatial analysis and visualization.
- Deliver high quality geospatial instruction and professional development opportunities, with emphasis on diversifying the GIS industry workforce.
- Create experiential learning opportunities related to emerging geospatial technologies.
- Develop and support scholarly collaborations among Pratt faculty.



Interactive map at *New York at its Core*, a Museum of the City of New York exhibition. [SAVI contributed](#) to analyzing spatial data and drafting data stories.

Research Agenda

SAVI's research focuses on **creative and critical GIS**. By that we mean the use of geospatial technologies for social and environmental justice research, and the critical evaluation of spatial data in terms of data ethics and data justice. Critical GIS is a well-established subfield, with diverse branches such as critical cartography, participatory GIS, counter-mapping, qualitative GIS, feminist GIS, digital geographies, spatial digital humanities, and critical quantitative methods. Theoretically, SAVI contributes by merging the creative strengths at Pratt Institute to the forms of critical data visualization already underway in these fields. Empirically, we are especially interested in applying critical GIS to urban questions. That is consistent with SAVI's longstanding focus on analyzing urban communities and environments, and with Pratt's extensive research portfolio on urban built environments. Following from this broad research theme, SAVI applies critical and creative GIS through two additional research themes: GIS education and community mapping.

We regularly engage in research and research-oriented teaching around **GIS education**, including both credentialed programs and workforce development. This is tied to the educational aspects of our mission, especially advancing spatial data literacy and GIS technical skills among Pratt students. We are interested in both using research to inform teaching practice (developing curriculum that reflects the state of the art in geospatial technology) and using teaching to inform research (integrating experiential and service learning opportunities into our research). We also place a high priority on initiatives that advance diversity, equity, and inclusion within STEM generally and the GIS industry specifically.

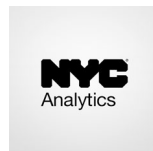
Finally, we apply critical and creative GIS to **community mapping** and related data visualization services. Many non-profit and community-based organizations have mapping and data visualization needs but lack in-house data science capacity. Hiring technical consultants can likewise be prohibitively expensive for those organizations. SAVI provides GIS technical expertise and draws broader connections with Pratt's design and data experts. This is consistent with our longstanding interest in using design to tell stories with data, and reflects our history of extensive community partnerships. We are interested in further integrating community-based projects into Pratt faculty research and student service learning.

Activities in Our Portfolio

Our **internal academic service** focuses on GIS education and faculty research support. We coordinate the School of Information's [Advanced Certificate in Spatial Analysis and Design](#), which includes regularly offering courses such as INFO 609: Introduction to GIS & Spatial Thinking, INFO 612: Advanced GIS, INFO 614: Programming Interactive Web Maps, and INFO 615: Spatial Statistics. We also support GIS curriculum elsewhere at Pratt, for instance offering GIS workshops in any course that wants one, providing tech support to instructors who teach with GIS, and helping to manage the Institute's ArcGIS license. Finally, we regularly advise Pratt researchers related to their questions about GIS, for example graduate student theses and faculty grant proposals.

Our **externally funded research** focuses on urban spatial analysis and community mapping services. Our work has been funded by agencies including the National Science Foundation, National Endowment for the Humanities, FEMA, US Forest Service, New York City Council, NYC Mayor's Office of Data Analytics, New York Community Trust, New York State Department of Environmental Conservation, and the Sloan Foundation. Since its founding in 2013, the center has worked with a diverse range of community partners, such as the Hudson River Foundation, Hester Street, Municipal Art Society of New York, Museum of the City of New York, North Brooklyn Neighbors, Regional Plan Association, Queens Museum, and the Urban Manufacturing Alliance.

SAVI's funders and partners have included:



QUEENS MUSEUM



People at SAVI

Faculty



John Lauermann

SAVI Faculty Director; Associate Professor, School of Information

John Lauermann is an Associate Professor in the School of Information and the Faculty Director of SAVI. His research uses GIS to map the impact of socio-economic inequality in US cities, on topics such as gentrification, housing, and mega-projects. He teaches in and serves as curriculum and teaching lead for the MS of Data Analytics and Visualization program, and coordinates the Advanced Certificate in Spatial Analysis and Design.



Caitlin Cahill

SAVI Affiliated Faculty; Associate Professor, School of Liberal Arts & Sciences

Caitlin Cahill is an Associate Professor of Urban Geography & Politics in the School of Liberal Arts and Sciences. She also co-coordinates the Social Practice Faculty Seminar. She is a community-based urban studies and youth studies scholar. Her research includes participatory action research projects with young people in cities investigating everyday intimate experiences of global urban restructuring, specifically as it concerns gentrification, immigration, education, and zero tolerance policies.



Rachel Daniell

SAVI Affiliated Faculty; Postdoctoral Fellow, School of Information

Rachel Daniell is a Postdoctoral Fellow at Pratt School of Information. She is an interdisciplinary scholar interested in temporality, spatiality, documentation, and metadata as they intersect with human rights, social justice, and historical memory. With a background that includes qualitative data projects, advocacy related to human rights, publications on social memory, and over fifteen years of experience in the nonprofit sector, she is interested in examining the ways we structure information and the impact of these choices on sociocultural and sociopolitical life. Her current research explores different systems for organizing information and representations of space, time, and events in data visualization. She also participates in collaborative research work toward more accurate and robust accounting of the deaths of persons in migration at the US-Mexico border as part of a multi-

state working group of academic researchers, humanitarian organizations, and medico-legal professionals. In NYC, she is part of the Data Through Design annual exhibition organizing team and works collaboratively with multiple research initiatives at Pratt Institute. She is passionately interested in how different documentation and data projects can contribute to our understanding of underrepresented histories and spark imaginaries for potential futures. At Pratt she has taught in areas related to information studies, information and human rights, GIS & design, interactive web mapping, web and database technologies, and the underappreciated beauties of data cleaning. In her work with students, she aims to help them hone their technology skills, further their critical approaches, and develop their own projects incorporating data and narrative.

Will Geary

SAVI Affiliated Faculty; Visting Assistant Professor, School of Information

Will Geary is a Geospatial Data Scientist passionate about mobility. He has worked on diverse problem areas ranging from optimizing urban bus schedules to analyzing politically motivated conflict. He currently works as Senior Data Scientist at Revel Transit, a Brooklyn-based electric mobility operator, and teaches Spatial Statistics in the School of Information graduate program.

Sara Hodges

SAVI Affiliated Faculty; Associate Professor, School of Architecture

Sara Hodges is a Visiting Assistant Professor in the School of Architecture. She is a geographer, data scientist, and interactive cartographer. Her research is cross-disciplinary with a focus on identifying inequities in public service delivery through spatial and quantitative analysis of public policy and modeling actionable solutions. Her core research areas include redistricting, education finance, housing, environmental justice and city planning. She loves to make connections between fields and to find intuitive and beautiful ways to share her research with policy-makers and the public.

Uzma Rizvi

SAVI Affiliated Faculty; Associate Professor, School of Liberal Arts & Sciences

Uzma Z. Rizvi is an Associate Professor of Anthropology and Urban Studies, and a Visiting Faculty at Shah Abdul Latif University, Khairpur, Pakistan. She received her PhD from the University of Pennsylvania and conducted her Postdoctoral Fellowship at Stanford University. She is the Principal Investigator for the Laboratory for Integrated Archaeological Visualization and Heritage (LIAVH), an interdisciplinary space bringing together archaeological research with data management, visualization, and heritage practice,

currently working at the UNESCO World Heritage Site of MohenjoDaro, Pakistan. Rizvi's work intentionally interweaves archaeology with cultural criticism, philosophy, critical theory, art, and design. With nearly two decades of work on decolonizing methodologies, intersectional and feminist strategies, and transdisciplinary approaches, her work has intentionally pushed disciplinary limits, and demanded ethical decolonial praxis at all levels of engagement, from teaching to research.

John Shapiro

SAVI Affiliated Faculty; Professor, School of Architecture



John Shapiro is a full-time professor and the former Chair of Pratt's Graduate Center for Planning and the Environment, during which time he oversaw the creation of SAVI. Before joining Pratt, John was for 25 years a principal of Phillips Price Shapiro Associates, Inc., one of the region's leading planning consultancies. John teaches across disciplines, including multi-program studios, thesis in both the planning and placemaking programs, the economics of placemaking, downtown/"Main Street" (re)vitalization, adaptive reuse of historic structures, and implementation tools (regulations, financing, etc.). A former geographer, John's current research focuses on climate change's impact on land use, infrastructure, and community "climigration." John has contributed to books on participatory planning, preserving urban industry, and the future of zoning. During his three decades as a consultant, John worked on virtually every type of plan, from site-specific to regional and from rural to metropolitan. Since joining Pratt, John has consulted on the desegregation of suburban NY and high-stakes mediation of complex NYC urban redevelopment and policy. John is the former president of the Metro NY chapter of the American Planning Association; he remains active in civic affairs, including the Regional Plan Association and the Municipal Art Society of NY. He and his work have won over 20 awards, including the national American Planning Association's first Presidential Award.

Graduate Students (2022-2023)



Alyssa Bement

MS City & Regional Planning



Mariah Hill

MS Data Analytics & Visualization



Radhya Kareem

MS Historic Preservation



Jesse Ludington

MS Museums & Digital Culture



Ziqi Wang

MS Data Analytics & Visualization

SAVI Alumni

Former staff:

- Jessie Braden, SAVI Director
- Sara Eichner, GIS analyst
- Can Sucuoglu, SAVI Interim Director
- Case Wyse, GIS analyst

Former graduate assistants:

- Haley Balcanoff, MS Sustainable Environment Systems 2020
- De Han, MS Data Analytics and Visualization 2020
- Josephina Matteson, MS City and Regional Planning 2020
- Drew Stanley, MS Data Analytics and Visualization 2020

- Zack Walker, MS Data Analytics and Visualization 2020
- Anna Yie, MS Sustainable Environment Systems 2020
- Jackson Chabot, MS Urban Placemaking and Management 2019
- Rachel Daniell, MS Data Analytics and Visualization 2019
- Lidia Henderson, MS City/Urban, Community and Regional Planning 2019
- Trapa Barua, MS City and Regional Planning 2018
- Jonathan Marable, MS City/Urban, Community and Regional Planning 2018
- Kim Robledo, MS City and Regional Planning 2018
- Maria Teresa Ruiz, MS City and Regional Planning 2018
- Adriana Beltrani, MS City and Regional Planning 2017
- Natasha Dwyer, MS City and Regional Planning 2017
- Fareen Islam, MS Urban Placemaking and Management 2017
- Sarita Rupan, MS Sustainable Environment Systems 2017
- Ahmad Shaibani, MS City and Regional Planning 2017
- Eugenia Tang, MS City and Regional Planning 2017
- Bowon Chung, MFA Digital Arts 2016
- Haley Cox, MS Urban Placemaking and Management 2016
- Lian Farhi, MS City and Regional Planning 2016
- Brett Promisloff, MS City and Regional Planning 2016
- Acacia Dupierre, MS City and Regional Planning 2015
- Jeff Sun, MS City and Regional Planning 2015
- Korin Tangtrakul, MS Urban Environmental Systems Management 2015
- Theo Roth, MS Library and Information Science 2014
- Allen Spector, MFA Communications Design 2014
- Leonardo Arias, MS City and Regional Planning 2013
- Jen Boggs, MFA Communications Design 2013
- Lindsay Donnellon, MS City and Regional Planning 2013
- Roz Palmer, MS Urban Environmental Systems Management, City/Urban, Community and Regional Planning 2013
- Sadra Shahab, MS City/Urban, Community and Regional Planning 2013
- Sara Margolis, MS City/Urban, Community and Regional Planning 2012
- Jen Mattei, MFA Communications Design
- Mariam Bowring

FY 2023 Activities

Instruction and Academic Service

Our internal academic service focuses on GIS education and professional development. Consistent with our mission to advance spatial data literacy at Pratt, we offer GIS education through direct instruction, curriculum support, and research on geospatial pedagogy.

Table 1: Academic Service Activities, FY 2023

Activities	Audience	Scope
Coordinated Advanced Certificate in Spatial Analysis and Design	Graduate and post-bac students in Schools of Architecture and Information	15 students to date
SAVI-affiliated faculty taught GIS courses including INFO 609, INFO 612, INFO 615, PLAN 702	Graduate students in GIS courses	37 students
Taught workshops in other courses including ARCH 870, COMD 460, SST 201	Students in non-GIS courses	42 students
Administered Pratt's ArcGIS site license; work with IT to identify cost savings and streamline user experience	Students, faculty, and staff	430 current ArcGIS users
Created/updated GIS user guides and curriculum resources	Students and faculty	
Provided technical advice for GIS projects	Students and faculty	14 faculty members; numerous student queries

Externally Funded Research

Our externally funded research focuses on urban spatial analysis and community mapping services. Consistent with our mission to advance spatial data scholarship at Pratt, we engage in research activities such as analyzing and visualizing data, publishing, presenting at conferences and workshops, and grant writing. In the 2023 fiscal year we managed \$353,000 in grants and contracts, co-authored seven grant proposals, and advised on three other faculty grant proposals.

Table 2: Externally Funded Research, FY 2023

Project	Funders & Partners	Total Budget
Mapping extreme gentrification	National Science Foundation, CUNY-Medgar Evers College, Brooklyn Public Library	\$125,733
Floodwatch/Floodnet	FEMA, Sloan Foundation, New York University, Cornell University, CUNY-Brooklyn College	\$54,499
TASC/Site by Site	New York Community Trust, Municipal Art Society of New York, Regional Plan Association	\$52,520
Hudson Access Project	NY Dept. of Environmental Conservation, Hudson River Foundation	\$43,916
Queens Museum Panorama	National Endowment for the Humanities, Mellon Foundation, Queens Museum, CYARK	\$37,060
Bushwick Inlet Park	NYC Dept. of Parks & Recreation, Friends of Bushwick Inlet Park	\$15,500
Data through Design festival	NYC Mayor's Office of Data Analytics, Data through Design	\$13,000
STEW-MAP	US Forest Service	\$10,900

Examples of our externally funded research include:

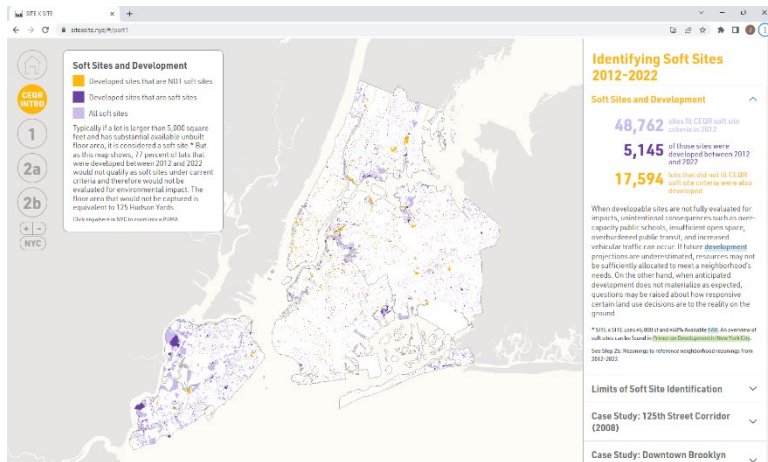
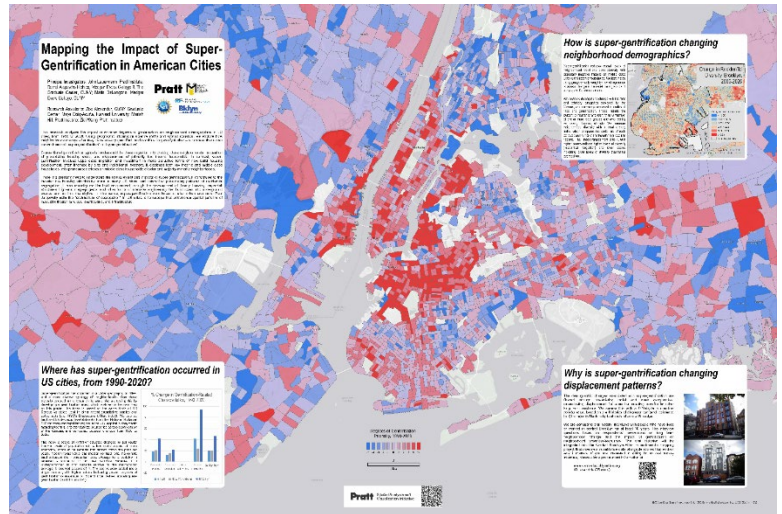
Mapping extreme gentrification

This research analyzes the impact of extreme degrees of gentrification on neighborhood demographics in US cities, from 1990 to 2020. Using GIS and spatial statistics, we explore how neighborhoods change after they have already gentrified, and continue to gentrify further - a process that urban researchers call "super-gentrification" or "hyper-gentrification".

Funded by: National Science Foundation, Pratt DEI Seed Grant

Partners: CUNY-Medgar Evers College, Brooklyn Public Library

Pratt Team: Mariah Hill, John Laueremann, Ziqi Wang



Site by Site

This project maps “soft sites” in New York City: lots that are eligible for redevelopment under the City Environmental Quality Review criteria. The team built a city-wide database of development patterns, designed data visualizations for the [project report](#), and built a [companion website](#) for mapping the data.

Funded by: New York Community Trust

Partners: Municipal Art Society of New York, Regional Plan Association

Pratt Team: Sara Eichner, Sara Hodges, John Laueremann, John Shapiro, Can Sucouglu

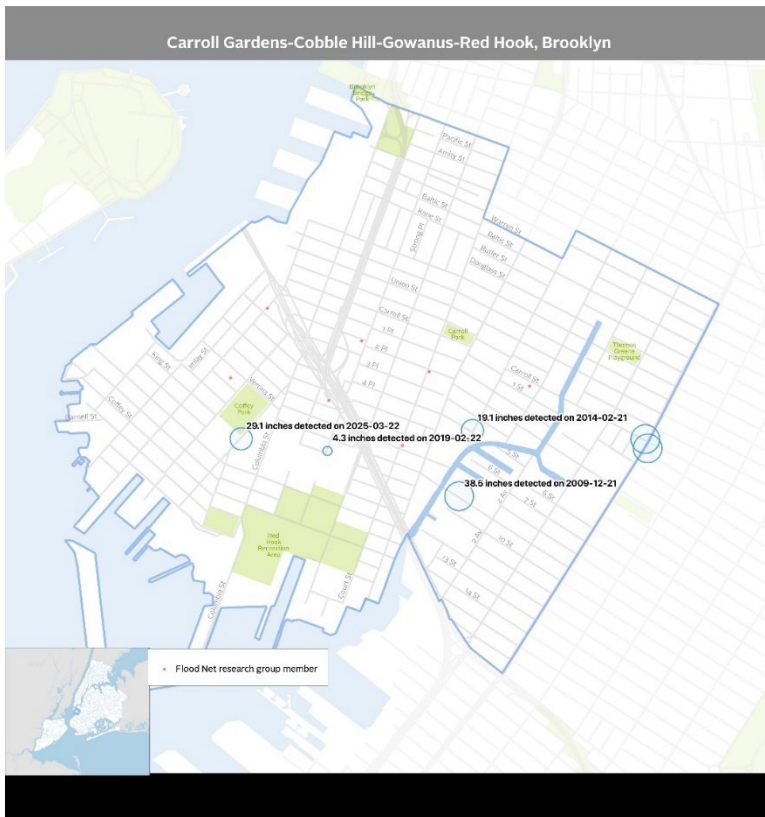
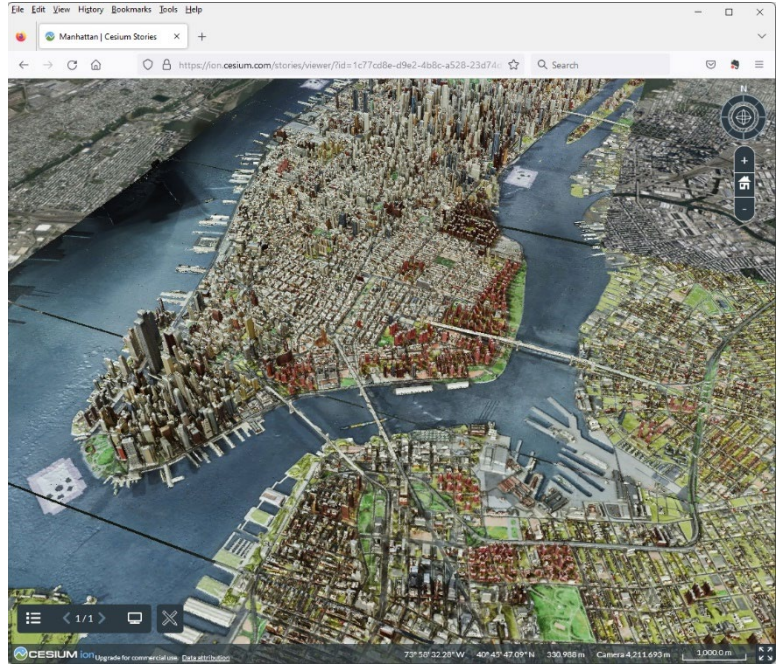
Queens Museum Panorama

This project built a digital companion to the museum’s Panorama exhibit, a diorama of the five boroughs built for the 1964 World’s Fair. Using 3D GIS tools, we georeferenced a high resolution lidar scan of the diorama, and built an [interactive tool](#) for users to explore the model and related data.

Funded by: National Endowment for the Humanities, Mellon Foundation

Partners: Queens Museum, Cyark

Pratt Team: Murray Cox, Sara Eichner, John Lauermann, Ziqi Wang



Floodwatch

This project tests methods of visualizing data about urban flooding, including both environmental sensors and citizen science generated information. The team designed static visualizations for public reports and a data visualization web tool.

Funded by: FEMA, Mellon Foundation

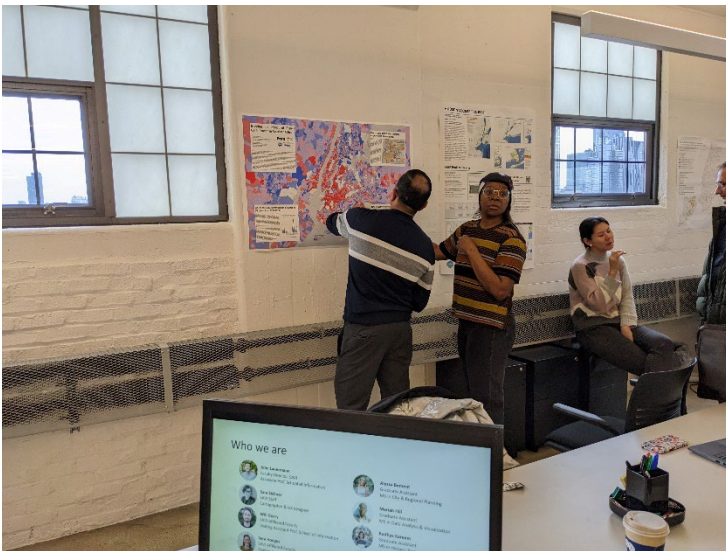
Partners: New York University, Cornell University, CUNY-Brooklyn College

Pratt Team: Sara Eichner, Sara Hodges, Can Sucouglu

Other Notable Activities

The 2023 fiscal year was a moment of transition for SAVI, as the center hired a new director and moved into new facilities at The Research Yard. A top priority for this transition was reinvigorating the center’s relationship with Pratt faculty and students – and reimagining how the center can contribute to the academic mission of the Institute. To do this we:

- Established an affiliated faculty group, recruiting six faculty from three Schools
- Recruited and mentored a team of five graduate research assistants
- Defined a research agenda through individual and group conversations with affiliated faculty
- Drafted a strategic plan in consultation with the Office of Research & Strategic Partnerships
- Rebuilt the broken SAVI website
- Built a digital archive of SAVI projects and history
- Designed a communications strategy, and a library of templates and graphics
- Co-authored seven grant proposals, and advised on three other faculty-led proposals
- Moved into our new space in The Research Yard
- Contributed to Research Yard programming such as presenting at Research Open House and co-convening the Research Yard Brown Bag Seminar Series



Research Open House, Spring 2023



Appendix

The SAVI strategic plan identifies goals within guidelines set by the Institute-wide Strategic plan that was approved by the Board of Trustees in May 2019. Our plan focuses on contribution to the Pratt academic mission, especially surrounding goals related to [academic excellence](#) and [diversity, equity, and inclusion](#).

Relating SAVI Goals to the Pratt Institute Strategic Plan

SAVI Goals	Related Pratt Strategic Goals
Produce academic research related to spatial analysis and visualization.	Engage critically and creatively with contemporary and near-future issues of socio-ecological urgency.
Advance interdisciplinary and community-based scholarship related to spatial analysis and visualization.	Elevate, foster, and support interdisciplinary teaching, research, and creative inquiry.
Deliver high quality geospatial instruction and professional development, with emphasis on diversifying the GIS industry workforce.	Ensure educational equity for all students by creating multiple pathways to academic excellence.
Create experiential learning opportunities related to emerging geospatial technologies.	Cultivate emerging applied and theoretical technological practices that foster innovation and integrative learning across the institute.
Develop and support scholarly collaborations among Pratt faculty.	Develop and support Pratt faculty in light of the changed – and still changing – nature of faculty work and the faculty work force.

These goals are assessed annually, based on a series of benchmarks defined in the strategic plan.

Benchmarks met or exceeded in FY 2023

SAVI Goals	Benchmark Activities
Produce academic research related to spatial analysis and visualization.	<ul style="list-style-type: none"> Defined a research agenda Developed a strategic plan SAVI affiliated faculty presented at two academic conferences SAVI affiliated faculty published two academic journal articles
Advance interdisciplinary and community-based scholarship related to spatial analysis and visualization.	<ul style="list-style-type: none"> Co-authored seven grant proposals Rebuilt the web and marketing portfolio Created a SAVI archive Established affiliated faculty group
Deliver high quality geospatial instruction and professional development, with emphasis on diversifying the GIS industry workforce.	<ul style="list-style-type: none"> Assessed curriculum for Advanced Certificate in Spatial Analysis & Design Taught GIS-related courses Advised current and prospective certificate students
Create experiential learning opportunities related to emerging geospatial technologies.	<ul style="list-style-type: none"> Recruited and trained five graduate research assistants Designed and delivered three GIS workshops Coordinated with IT to manage GIS licenses for 430 users
Develop and support scholarly collaborations among Pratt faculty.	<ul style="list-style-type: none"> Provided technical advice for 14 faculty member projects Answered several hundred student queries related to GIS coursework or thesis research

Contact

The Research Yard, Building 3, 63 Flushing Ave, Brooklyn, NY 11205

<https://www.pratt.edu/research/spatial-analysis-visualization-initiative/>

savi@pratt.edu