PATRICIA FRONTIERA, PH.D,

GEOSPATIAL DATA SCIENTIST, CONSULTANT AND INSTRUCTOR

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EDUCATION

PH.D.   University of California, Berkeley. Environmental Planning, 2005. Emphasis on geographic information retrieval.

M.L.I.S.   University of California, Berkeley, School of Library & Information Studies, 1993.

B.A.   Wellesley College, Massachusetts, 1984. History.

PROFESSIONAL EXPERIENCE

2021 - 2022   **Interim Executive Director,** Social Sciences Data Lab (D-Lab), UC Berkeley
As Interim Director, managed senior staff, maintained existing and developed new organizational relationships, undertook special project planning and development, and engaged in strategic planning around short and medium term organizational goals.

2019 - 2022   **Co-Executive Director**, Federal Statistical Research Data Center, UC Berkeley
Actively manages the day-to-day activities of the Berkeley FSRDC, a partner member of a national program to provide advanced scholars with secure access to federal microdata products.

2019 - 2021   **Data Services Lead**, Social Sciences Data Lab (D-Lab), UC Berkeley
Leads the administrative, census and geospatial data and analysis team at the D-Lab which involves developing the geospatial workshop curriculum, teaching workshops and consulting on geospatial topics and projects.

2017 - 2019   **Geospatial Data Scientist**, Social Sciences Data Lab (D-Lab), UC Berkeley
Initiate, lead, advise and collaborate on research projects with a geographic data, mapping, spatial analysis or visualization component. Feedback and evaluation lead for organizational analysis of D-Lab internal data. Provide consulting and instructional services to the UC Berkeley community on geospatial mapping & analysis topics.

2014 - 2017   **Academic Coordinator**, Social Sciences Data Lab, UC Berkeley
Planned and coordinated an instructional workshop program to support graduate-level data intensive social science research that grew from approximately 100 to 275 workshops during the academic year. Developed data science curriculum and related protocols, procedures and documentation. Recruited, hired, trained and supervised graduate students to support D-Lab instructional & consulting services.

| 2008 - 2014 | **Senior GIS Technology Specialist**, The San Francisco Estuary Institute
Designed and developed custom web-based mapping applications and spatial analysis tools to engage a diverse group of stakeholders including scientists, planners, resource managers and the general public in aquatic ecosystem data. |
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2005 - 2006   **Post-doctoral Research**er, College of Natural Resources, UC Berkeley
Researched structural vulnerability to wildfire in the wildland-urban interface as part of a Center for Fire Research and Outreach team developing a wildfire risk and hazard assessment toolkit.

1996 - 2003   **GIS Programmer & Project Manager**,
Geographic Information Science Center, UC Berkeley, 2003
Center for Environmental Design Research, UC Berkeley, 1996-2002
Geospatial data analyst, research programmer and systems administrator. Member of research teams that pioneered the development of open source GIS standards, technologies and web-mapping tools for environment planning applications.

1993 – 1996   **Computer Manger**, Department of City & Regional Planning and Department of Landscape Architecture & Environmental Planning, UC Berkeley
As a MS Windows and Mac systems administrator provided hardware, software and networking support for the students, staff, and faculty of two departments.

UC BERKELEY TEACHING EXPERIENCE

2014 – 2022   Develop and teach workshops on geospatial data, mapping and spatial analysis in R, Python, QGIS, ArcGIS and ArcGIS Online and on data visualization in Tableau, averaging 10 per semester. See: http://gitub.com/dlab-berkeley

Fall 2015-Spring 2017   Lecturer, Geospatial Data Exploration (ESPM88a). Developed and taught a new, innovative undergraduate course for the UC Berkeley Data Science Education Program (now the Division of Data Science) in the exploration of geospatial data and analysis in Python using Jupyter notebooks.

Spring 2012   Co-Lecturer, Introduction to GIS and City Planning (CP2014c).

Spring 2010   Lecturer, Introduction to Geographic Information Systems (ESPM 72).

Spring 2005   Lecturer, Quantitative Methods in Environmental Planning (LA221).

RECENT RESEARCH PROJECTS

2020   *Data Science for Housing*, Karen Chapple & Claudia von Vacano, co-PIs
Served as curriculum lead and instructor for the development of a professional training that introduced urban planners to the use of Python for data science based analysis.

Nov 2017 - 2022	*The Louisiana Slave Conspiracies Project*. Bryan Wagner, UCB English Department, PI. Working with the PI and a team of graduate and undergraduate URAP students, managed the development of a web site to share data two slave conspiracies that occurred in 1791 & 1705. Create a spatial database of conspiracy locations mentioned in the testimonies. The archive went live in 2020 at https://lsc.berkeley.edu.
Jan 2018 - 2021	*Mapping Spatial Inequality – Immigrants in Poverty and Community Service.* Irene Bloemraad, UC Berkeley Sociology Department, PI. Lead technical advisor and mapping analyst on the development of web tools and maps to analyze the spatial distribution of health and legal services for immigrant communities.
July 2018	*Spatial analysis of racial composition and traffic stops*. Created expert witness rebuttal report for the ACLU and co-counsel Simpson Thatcher & Bartlett LLP, (*Brown v. Madison County*).
Jan 2017 – May 2018	*Digital Refuge: Aggregating and Visualizing Asylum Seeker and Host Community Concerns in Crisis*. Prof Katerina Linos, UC Berkeley Law School, PI Lead technical and geospatial developer of an interactive website for presenting the results of text analysis of social media data. See: https://digitalrefuge.berkeley.edu/
Mar -Aug, 2017	*Analysis of feeder patterns in the California Educational Pipeline.* The College Futures Foundation. Created Tableau dashboards visualizing California Department of Education, California Community College, California State University, and University of California data that would allow College Futures Staff the ability to examine the composition of student bodies by institution or county over time.

TECHNICAL SKILLS

Geospatial	ArcGIS, QGIS, R-spatial, Python-spatial, PostGIS, GDAL/OGR, ESRI & Google geocoding
Programming	R, Python, JavaScript, HTML, PHP, shell scripting, git/Github, various APIs
Visualization	Tableau; R: ggplot2, leaflet, R-Shiny; Python: Seaborn, Altair, Folium, Matplotlib
Other	MS Office Suite, Google Docs, Adobe Acrobat, Abby Fine Reader

SELECTED PUBLICATIONS AND PRESENTATIONS

- Frontiera, P., Powell, S., Small, S., Thomas, J., Wagner, B. (2022) *The 1791 and 1795 Slave Conspiracies in Pointe Coupee, Louisiana: A geospatial dataset*. Journal of Slavery and Data Preservation 3, no. 2 (2022): 21 - 29. https://doi.org/10.25971/t7h4-0w23.
- Frontiera, P. (2018 June), *New approaches to visualizing spatial data*. Summer Institute in Migration Research Methods, Berkeley Interdisciplinary Migration Institute, UC Berkeley.
- Wagner, B., Frontiera, P., Morrison, A., Small, S. (2017 March). *The 1795 Louisiana Slave Conspiracy*. A presentation at the History Design Studio Workshop on Digital Humanities for Caribbean History, Harvard University.
- Frontiera, P. (2016, April). *Comparison of Reference Datasets used for Geocoding US Addresses.* Presented at the Annual Meeting of the Association of American Geographers, San Francisco, CA.

- Powell, S., von Vacano, C., and Frontiera, P. (2016, April). *Teaching GIS for Digital Humanities.* Presented at the Association of American Geographers Annual Meeting, San Francisco, CA.

- Frontiera, P. (2013, April). *Developing a dynamic web-based landscape profile tool*. Presented at the 19th Annual California GIS Conference (CalGIS), Long Beach, CA.

- Frontiera, P. (2011, May). *Spatial methods for browsing and searching multi-media resource collections*. Invited speaker at the Plenary session of the Nevada GIS Annual Conference, Reno, NV.

- Frontiera, P. (2010). Spatial data integration. In: B. Warf (Ed.) *Encyclopedia of Geography*, Thousand Oaks, CA: Sage.

- Frontiera, P. (2008). *Proceedings of the ACM 17th Conference on Information and Knowledge Management: Flamenco + Geo: extending a search interface based on hierarchical faceted metadata with geographic capabilities*. (GIR'08) Napa, Ca.

- Frontiera, P., Larson, R. & Radke, J. (2008). A comparison of geometric approaches to assessing spatial similarity for geographic information retrieval. *International Journal of Geographical Information Science*, 22:3, 337 - 360.

- Frontiera, P., & Foster, H. (2007, April). *Spatial approaches to representation and ranking for geographic information retrieval*. Presented at the Annual Mtg of the Association of American Geographers, San Francisco, CA.

- Moritz, M.A., Kelly, M., Kearns, F., Frontiera, P., Casey Cleve, C., Sapp, J., Waite, S. & Goldstein, N. (2006, March). *A webGIS decision-support tool for parcel-based fire hazard assessment in California*. Presented at the Annual Meeting of the Association of American Geographers, Chicago.

- Radke, J., Xu, J. & Frontiera, P. (2005, August). *Establishing concave geometric approximations to better capture spatial location, extent and shape for geographic information retrieval*. Presented at the 8th International Conference on GeoComputation (GeoComputation 2005), Ann Arbor, MI.

- Frontiera, P. (2004). *A probabilistic approach to spatial ranking for geographic information retrieval*. (Unpublished doctoral dissertation). University of California, Berkeley.

- Larson, R.R., & Frontiera, P. (2004, September). Spatial ranking methods for geographic information retrieval (GIR) in Digital Libraries. In Heery, R. & Lyon, L. (Eds), *Research and Advanced Technology for Digital Libraries: 8th European Conference on Digital Libraries* (ECDL'04), Bath, UK. *Springer LNCS* 3232: 45-56. (**This paper received the conference DELOS award for Best Paper).**

- Larson, R.R., & Frontiera, P. (2004, July). *Ranking and representation for geographic information retrieval*. Presented at SIGIR 2004 Workshop on Geographic Information Retrieval. Sheffield, UK.

- Landis, J., Reilly, M., Twiss, R., Foster, H., and Frontiera, P. (2001). Forecasting and mitigating future urban encroachment adjacent to CA military installations, *IURD Working Paper*, University of CA, Berkeley.

- Frontiera, P. (2001, March). *Spatial metadata and geographic knowledge discovery*. Presented at the 92nd Conference of the American Planning Association, New Orleans, LA.