

Exhibit 3

REPORT

Congressional Redistricting in Tennessee

The Impact of House Bill 7003 / Senate Bill 7004 (May 7, 2026) on the Voting Age Population of the Impacted Districts

12 May 2026

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Overview

I was asked by Plaintiffs' counsel to provide a visual analysis of the impact of Tennessee House Bill 7003 / Senate Bill 7004 (May 7, 2026) in which the Tennessee General Assembly redrew the congressional map of the state of Tennessee.

The visual analysis illustrates the change in the Tennessee congressional map from the existing District 9 population concentrated in Memphis, Shelby County to the redrawn Districts 5, 8, and 9, which spread the Memphis population across the western half of Tennessee.

The visual analysis illustrates the impact of the new districts on the Black Voting Age Population of the impacted Districts, Memphis, Shelby County, and its neighborhoods. The visual analysis of Memphis demonstrates the divisive impact of the law on those communities.

Expert Bio and Qualifications

I am an information designer and visualization expert dedicated to enabling informed decision-making for public and private sector institutions. My work sits at the intersection of **public policy, design, technology, and entrepreneurship**, with research focused on data visualization, social innovation, and public impact.

Leadership & Academic Roles

I am the founder and CEO of **RyeCatcher Education** and the non-profit **Community Success Institute**. As an Adjunct of Practice at the Carnegie Mellon University School of Design, I developed and teach courses on *Design for Social Innovation* and *Designing Data*.

Regional Impact: Memphis

With over a decade of experience in the Memphis region, I have worked extensively with schools in Orange Mound, Frayser, and North and South Memphis. Through RyeCatcher's software implementation, I gained deep insights into local community dynamics, providing critical perspectives on how district boundary lines affect and divide various neighborhoods.

Speaking & Advisory Work

I frequently speak and present on panels about my work. I have presented at international conferences such as **SxSWedu** and **Digital Media and Learning**. I am also a regular guest lecturer at institutions including Brown University and Yale University, discussing topics such as:

- Information Design & Data Visualization
- Positive Sum Design
- Education Technology & Entrepreneurship

I have previously served as a subject matter expert for federal projects and philanthropic task forces, providing data analysis, web strategy, and grant application reviews. For example, I worked with the **White House Office of Science and Technology Policy** on Open Data projects during the Obama administration and served on the MacArthur/Gates "Learning Analytics to Enable Personalized Learning" task force.

Current Projects & Education

My visualizations have been published by **Oxford University Press** and numerous peer-reviewed journals. I am currently developing visualizations to map the policy infrastructure of U.S. fisheries. My consultancy continues to provide UX research, strategy, and design services to diverse global organizations.

I hold an **A.B. in Public Policy and American Institutions** from Brown University and an **M.Des. in Information Design and Communication Planning** from Carnegie Mellon University.

My CV is appended to this report and is at <https://www.lakrishnaswami.com/curriculum-vitae>.

Methodology and Tools

I was asked to perform a visual analysis of Congressional District Data for the state of Tennessee, the Memphis city, Shelby County, and precinct level data.

I used publicly available datasets.

I used Geographic Information Systems software to analyze the data. The software used in the analysis were Maptitude, Mapbox, ArcGIS, and MapShaper.

The process that I undertook to conduct the visual analysis that included sketching a variety of concepts using GIS software to explore congressional districts, US Census, Voting Age Population, and a variety of demographic data in Shapefile, GeoJSON, and csv formats. The visual output of these analysis was shared with the plaintiff to understand the impact of the redistricting on the Voting Age Populations of the impacted Districts.

Analysis included multiple thresholds for Voting Age Populations, visual styles for representing the shifting of population over time, methods for showing demographic data over time, and techniques for highlighting key impacts and the overall shifts and changes to the district, city county, and state.

Once the visual analysis was complete, I compiled the summary into a series of graphics included in this report.

Data Sets

<https://hub.arcgis.com/datasets/ed71ab73dac14a93a7cd1020352bdfbc/about>

<https://hub.arcgis.com/datasets/ed71ab73dac14a93a7cd1020352bdfbc/about>

https://hub.arcgis.com/datasets/4ec7214818d04921bc4a58b9eb5dcca9_0/explore?location=35.801032%2C-86.022612%2C6

<https://www.census.gov/geographies/mapping-files/time-series/geo/tiger-line-file.html>

Compensation

I was compensated at a rate of \$175/hour for my time, knowledge and effort to complete the requested visual analysis in this report. The fees are reasonable and customary for this type of service. Payment for services does not impact the findings in this report.

Visual Analysis

Exhibits

Tennessee Redistricting

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Tennessee Redistricting: Current District 9, Memphis, Shelby County (2022)
(before 2026 TN HB 7003 / SB7004)

Figure 1 is the current District 9 (pre-2026), focused on Memphis in Shelby County. The Black Voting Age Population is displayed as a percentage.

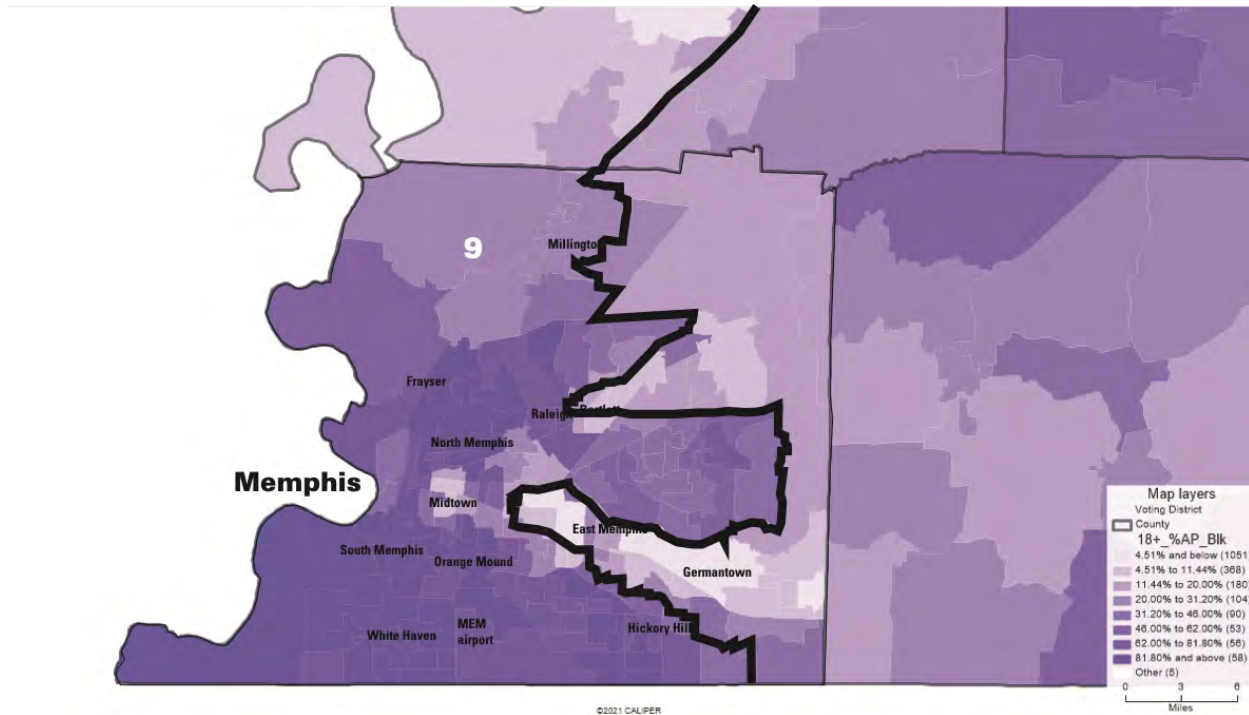


Figure 1. Tennessee Redistricting: Memphis, Shelby County, District 9 (2022)

Tennessee Redistricting: Memphis, Shelby County Districts 5, 8 &9 (2026)
(after 2026 TN HB 7003 / SB7004)

Figure 2 shows how the 2026 map split the Memphis, Shelby County 9th District between Districts 5, 8 and 9. The purple shading represents the Black Voting Age Population (18+).

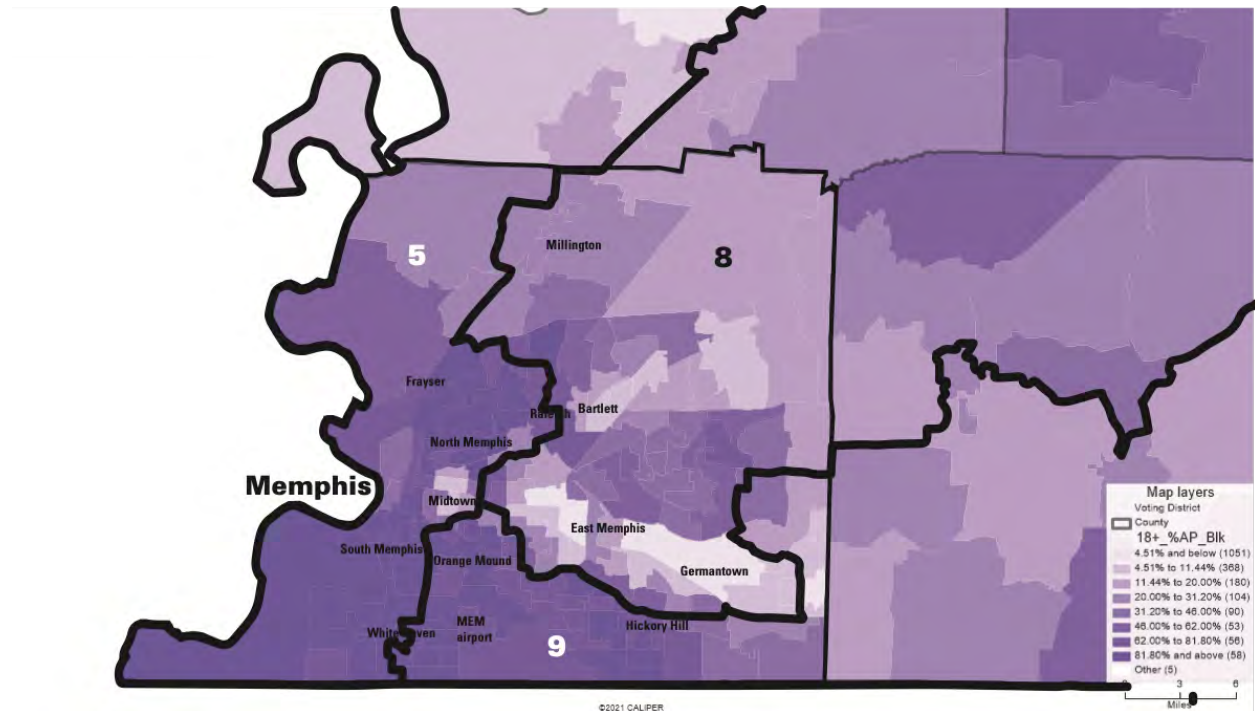


Figure 2. Tennessee Redistricting: Memphis, Shelby County, Districts 5, 8 &9 (2026)

Tennessee Redistricting: Western and Central TN Congressional Districts (2026)
(after 2026 TN HB 7003 / SB 7004)

Figure 3 illustrates the redrawn Districts 5, 8 and 9, which contain the population previously represented by District 9.

The new map splits the population of Memphis between three districts. District 5 extends from North Memphis to south Nashville. District 8 from the Midtown Memphis over 90 miles into rural Central Tennessee. The new District 9 third extends from South Memphis to southern Nashville.

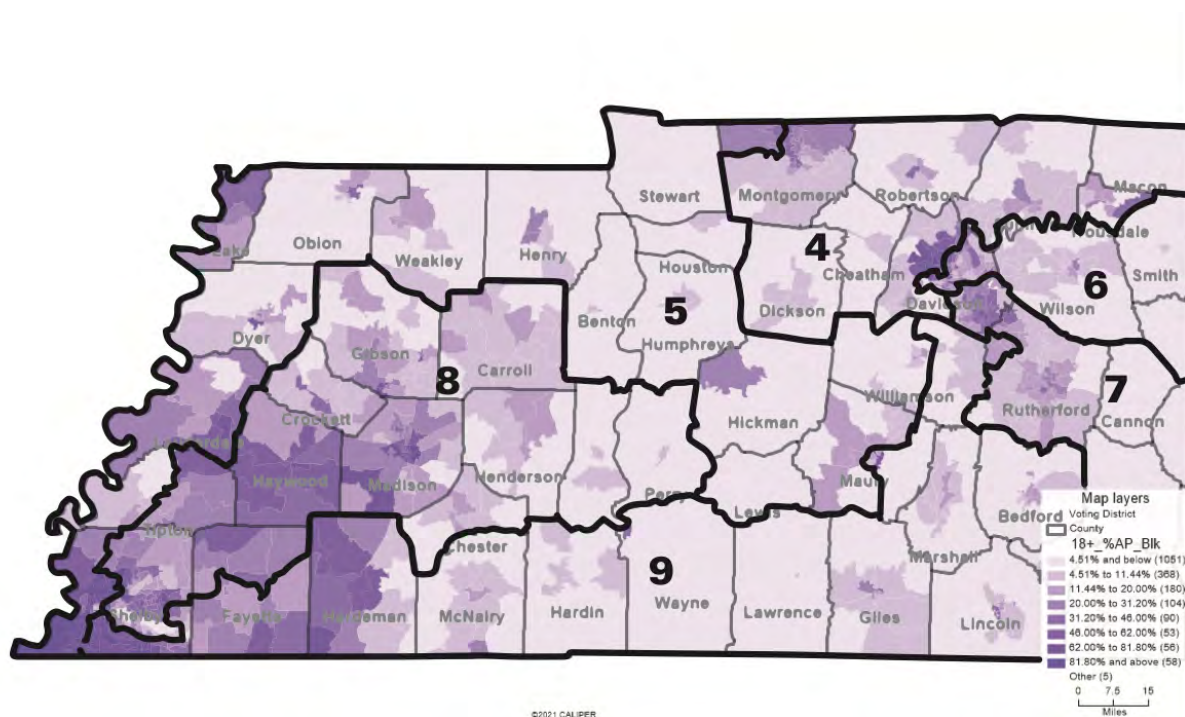


Figure 3. Central and Western TN Congressional Districts (2026)

Dilution of the Memphis Black Voting Age Population (VAP)

Figure 4 illustrates the dilution of the Black VAP from District 9, to the new Districts 5, 8, and 9. The existing District 9 contained a Black VAP of approximately 60%. The new Districts split the Black VAP across the three districts such that none exceed 32%, and within a range of approximately 5%.

2022 District 9, with density of Black Voting Population

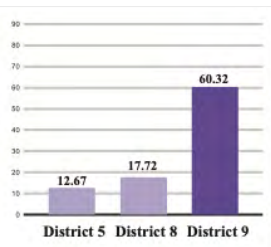


2026 Redistricted Districts 5, 8 & 9, with density of Black Voting Population

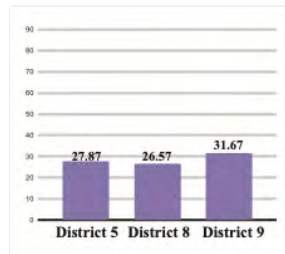


2026 Redistricting Impact on Districts 5, 8 & 9 Black Voting Population (%)

2022



2026



	2022	2026
District 5	12.67	27.87
District 8	17.72	26.57
District 9	60.32	31.67

Figure 4. Dilution of the Memphis Black Voting Age Population in District 9

The Impact on Memphis Neighborhoods, by Black VAP

Figure 5 illustrates the impact of redistricting on the Black VAP of Memphis, Shelby County. The visualization highlights the significant divisive impact on key neighborhoods, all of which were historically a part of District 9. Racially similar and community-oriented neighborhoods were divided, and a district that had represented a city and its surroundings was clearly *visually* divided into three districts.

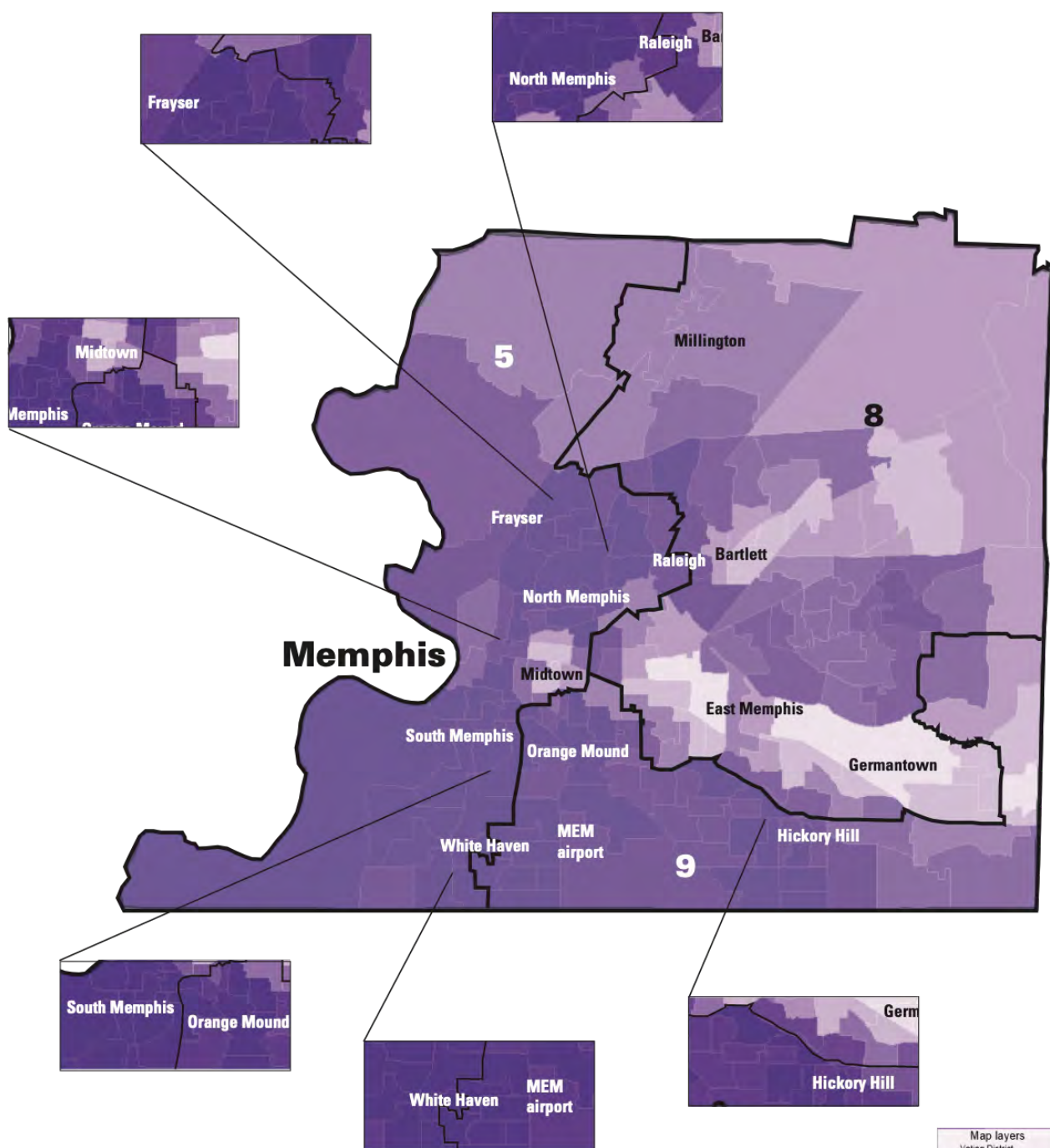


Figure 5. The Impact on Memphis Neighborhoods, by Black VAP

The Impact on Memphis Neighborhoods, by Race of Household VAP

Figure 6 illustrates the impact of the redistricting on the Black VAP by Household of Memphis, Shelby County. The visualization highlights the household level impact on key neighborhoods, all of which were historically a part of District 9.

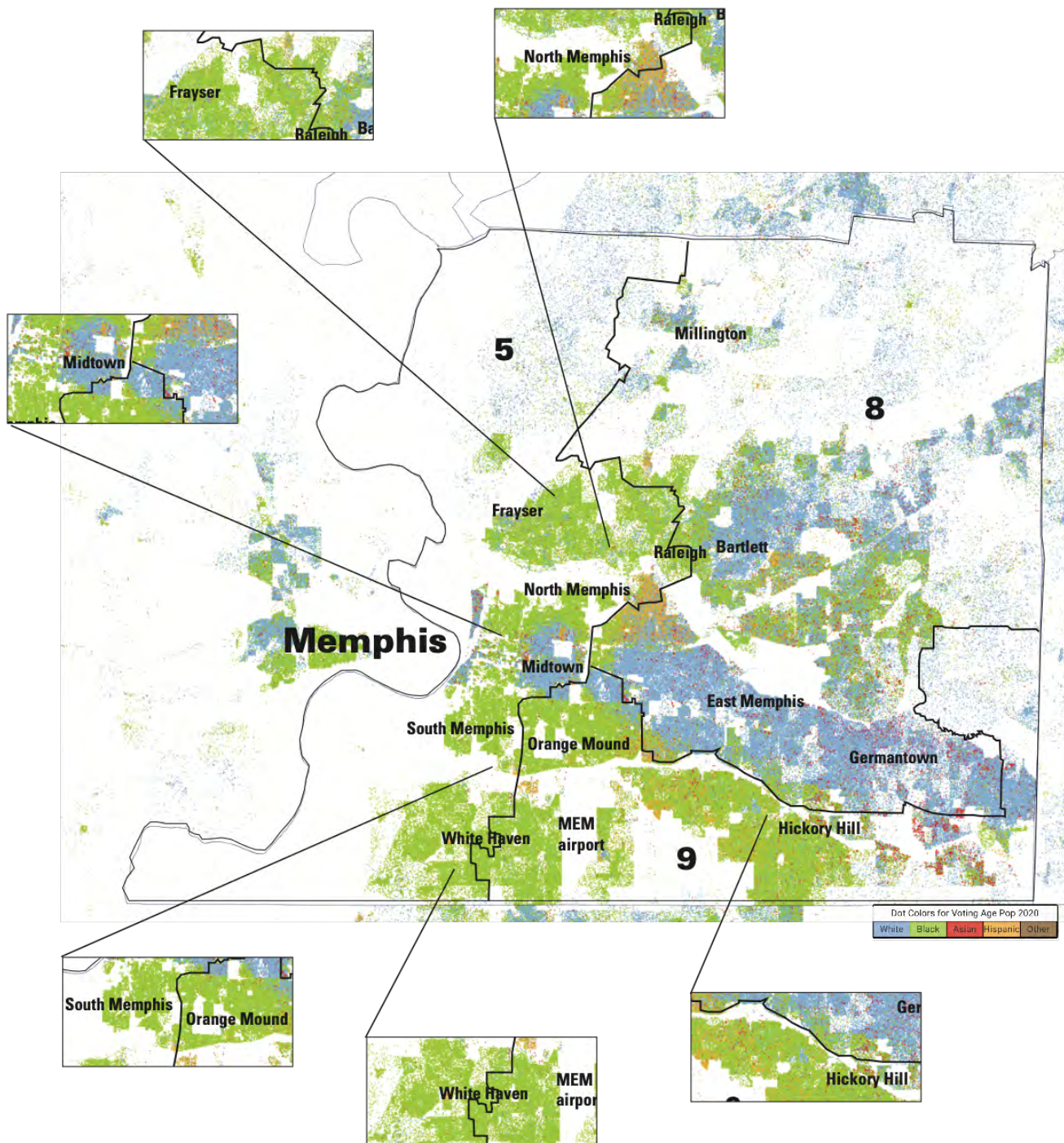


Figure 6. The Impact on Memphis Neighborhoods, by Race of Household VAP

Disclaimer

I reserve the right to modify, update, or supplement my opinions in light of additional facts, testimony and/or materials that may become available.

My work in this matter is ongoing, and I reserve the right to modify, update, or supplement my report, particularly as additional information is made available to me.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.



L. Arthi Krishnaswami

Overview

An information designer, data visualization expert and education technology product leader, who uses methods from public policy analysis and user-centered research to enable informed and educated decision-making for a wide range of audiences.

She is the Founder of RyeCatcher Education PBC and the not-for-profit Community Success Institute (501(c)3).

She is a photographer who has worked with noted artists and public figures, including Norah Jones, Sasha Dobson, Bill Murray, Henry Louis Gates Jr. and Don Was.

Experience

RyeCatcher Education PBC

Founder and CEO of RyeCatcher (2012 to present)

Led the strategy, design, user research and development of the award-winning RyeCatcher software application from idea through pilot through its current implementations serving over 16,000 students per year from at-risk and underserved environments.

Initiatives

Needs Mapping for Student Success (Book chapter)

Building a Community of Trust in Education (Case study)

Community Mapping in Klondike-Smokey City (Case study)

Informed consent for data sharing for students and schools 2017 (Case study)

Community Success Institute 501(c)3

Founder (2017 to present)

Founded the not-for-profit Community Success Institute in 2018 to extend the work of RyeCatcher to broader audiences at a lower or no cost. Leverage the power of open source software, open access research and publishing, and training of the next-generation of scholars and innovators to create communities of trust in education across America.

Education

Carnegie Mellon University

Master of Design, Communication Planning & Information Design

Brown University

Bachelor of Arts, Public Policy & American Institutions

Skills overview

Software

Figma, Miro, Adobe CS, InDesign, Illustrator, Photoshop, Acrobat; Microsoft Office Suite, Visio, Access, SPSS, Stata, GIS tools

B&W darkroom and digital photography

Carnegie Mellon University School of Design

Adjunct of Practice (2018 to present)

[Design for Social Innovation](#)

Teach and designed the curriculum for a full-semester seminar course entitled Design for Social Innovation at the CMU School of Design. The course teaches a framework that brings together the perspectives and methods of design, public policy, technology and business in the service of addressing social sector challenges.

Project Sponsor and advisor, Graduate Interaction Design studio (Deal/O’Leary, 2013 to 2018)

Collaborated with Ashley and Raelynn to design a 5-week mini-project to explore key themes, challenges and problems facing users of the RyeCatcher application. Key projects included designing mobile interfaces, visualizing data, and exploring mechanisms for data entry.

Relevant CMU SoD student-supported projects

[COVID resurgence journeys web experience](#) 2020

Storytelling web site to explore the experience of at-risk students and families during the initial COVID crisis. The site uses a cartoon, graphic-novel style of visual presentation to make information engaging and accessible to a wide variety of audiences. The tool was created using Creative Commons open licensing to facilitate the sharing and extending of the icon and characters from the system.

[School Vaccine HUB](#) 2021

Online database of resources for school communities containing expertly vetted news, information and science about the COVID-19 vaccine. The resource was a user-centered, iterative web resource designed to be scaled and extended over time. Critical components were a mechanism to tag, create custom hierarchies, and clearly identify sources and citations to support validity of data and informed decision-making.

Brown University

1997–present

Information Designer

Project Advisor: Professor Ross Cheit, Brown University, Watson Institute of Public Affairs & Taubman Center for Public Policy

Projects

The Politics of Fish: Designing visualizations and graphics for a book that explores the development of the regulatory and policy infrastructure of US fisheries management. Under contract for publication by Temple University Press

Recovered memory project recoveredmemory.org

Graphics and data visualizations for papers in journals (see Publications)

Designed a system of diagrams and graphics for visualizing complicated and historically significant legal cases. Published hardcover: Oxford University Press 2014, (softcover 2016).

Designed and conducted research on a series of data-rich policy analysis documents, the Brown Policy Reports, related to the Freedom Information Act. ***Access to Public Records*** 1997–98, ***Open or Shut*** 1999, ***Private Courts, Public Records*** 2000, ***Quasi-Public Information*** 2003, ***Statutory Rape*** 2005.

Cambridge International Assessment

User Experience Strategist and Information Design consultant (2019 to 2023)

Developed a strategy and information design and architecture for the first [US web experience](#) for Cambridge International's North America (US) product/service offering. Developed a three year rollout strategy for a user-centric architecture based on extensive user research at every phase of the project. Beyond the US website, worked with the UK based technical team to design the information architecture, interaction design and data strategy for the online [transcript sending](#) and payment services, and international [college credit search](#) platform.

College Board

2007–2013

Values Award 2008 (highest award for service in the organization)

Built and ran the user experience practice, and developed a segmentation model of the education sector. Key initiatives included the creation of the first online accommodations application and tracking system/dashboard for students with disabilities, the redesign of the SAT score sending experience; the redesign of the end-to-end PSAT system; and the AP reporting redesign.

Senior Director, Strategic Insights

Developed a systematic research approach and methodology to create the first comprehensive model of the College Board constituency across Programs, services, and channels. Acted as a change agent to help shift the College Board to an audience-centric approach through the development of a company-wide program of information sharing.

Senior Director, User Experience (2008-11)

User Experience Architect (2007-08)

Developed and implemented a user-centered design and research approach for the College Board's web design and development group. Worked with Executive Director to build and lead a team of information architects, user-researchers, interaction designers, experience strategists and prototype developers in the envisioning, user research, design strategy, initial concept creation, usability testing and prototype development of digitally-centered experiences at the College Board. Implemented a usability testing process, monthly usability testing sessions, and built a mobile testing lab. Conducted all forms of user-experience and usability testing on a wide variety of print and web-based products, from online registration applications to complex data displays and education programming. Mentored and trained junior team members.

Key Projects: SAT Score Choice, Springboard Online redesign, Services for Students with Disabilities Online Application system, AP Online Score Reports system, SAT Site redesign, PSAT Skills Reporting Redesign, CollegeEd Online, College Planning, AP Teacher Effectiveness System.

Federal Reserve Bank of NY

2011–2012

Consultant, User research and Information Design

Worked with the Federal Reserve Bank of NY to develop a game-based program for teaching monetary policy in schools. Developed a strategic plan for user research throughout the project lifecycle that included generative research, persona development, and iterative usability testing.

National Association for Urban Debate Leagues (NAUDL)

2009–2010

Consultant, Information Design

Developed a set of information graphics based on complex quantitative data.

Siegel+Gale

2006–2007

Information Architect

Developed information architecture for online and print materials, ensuring the solution satisfies the expectations for utility and ease-of-use, while supporting business requirements and brand strategy. Created customized research plans for client engagements of varying size and complexity.

West Harlem Environmental Action (WE ACT)

2007

Information Architect

Developing a user-centered architecture for the real-time air quality reporting website *Uptown Sky*.

Duke Children's Environmental Health Institute (CEHI)

2006

User Experience Consultant

Analyzed the usability, readability, and legibility of the maps generated by Geographic Information Systems (GIS), which are used to display and communicate information about the risk of lead exposure for children.

Morningstar, Inc.

2005

User Experience Consultant

Conducted the first user experience research for Morningstar.com, the consumer-facing portion of the company's web offerings. Utilized quantitative and qualitative methods to understand the current user experience, and identify opportunities for enhancements.

United States Postal Service DMM Transformation

2004–2005

Information Designer

Performance Logic

2000

Associate, Product & Business Development

Photographer

2001–present

Highlights: Norah Jones; Bill Murray; Henry Louis Gates Jr.; Don Was; Carnegie Mellon University.

Patents

United States (2018)

EDUCATION DATA PLATFORM TO SUPPORT A HOLISTIC MODEL OF A LEARNER

US 10,147,335 B2

Dec. 4, 2018

A computer-implemented holistic student performance management system for education is provided for tracking, analyzing and reporting student data. The system identifies at-risk students and student needs, and generates recommended interventions based on student's academic and non-academic experience and needs to address these needs. The system enables tracking of the interventions, student performance and behavior for all student populations.

Singapore (2020)

<https://patents.google.com/patent/SG11201900227WA/en?inventor=lakshmi+arthi+krishnaswami&q=lakshmi+arthi+krishnaswami>

Canada (2023)

3,030,614

AN EDUCATION DATA PLATFORM TO SUPPORT A HOLISTIC MODEL OF A LEARNER

<https://patents.google.com/patent/CN110337682A/en?inventor=lakshmi+arthi+krishnaswami&oq=lakshmi+arthi+krishnaswami>

Publications and conference proceedings

2006

Krishnaswami, L. Arthi. "Information Design for Enhanced Public Policy Analysis.", Master of Design Thesis, Carnegie Mellon School of Design, 2006.

2007

Zarcadoolas, Christina; Boyer, Jennefer; Krishnaswami, Arthi; and Rothenberg, Andrea (2007) "GIS Maps to Communicate Emergency Preparedness: How Useable Are They for Inner City Residents?", Journal of Homeland Security and Emergency Management: Vol. 4 : Iss. 3, Article 16.

DOI: 10.2202/1547-7355.1367

Available at: <http://www.bepress.com/jhsem/vol4/iss3/16>

CELS law review paper

Information design and data visualization

Roger Williams Law Review Article

Information design and data visualization

2013

Task Force: *Learning Analytics: Building the Field report*

Information design and data visualization

2014

The Witch Hunt Narrative (Hardcover)

Illustrator, Information design and data visualization

Aspen Institute report: Learner at the Center of a Networked World

Contributor

2015

DML conference proceedings

Case Study: *Needs Mapping for Improving Student Outcomes*

2016

The Witch Hunt Narrative (Softcover)

Illustrator

2017

Author; Chapter: *The RyeCatcher Needs Mapper (UCD)* NOVA Science publishers (2017)

2020

<https://www.the74million.org/article/educators-view-meet-the-students-helping-teachers-understand-what-pandemic-life-is-like-at-home/>

<https://www.gettingsmart.com/2020/09/09/educating-all-learners-alliance-shares-personas-that-educators/>

2021

<https://www.gettingsmart.com/2021/03/31/why-we-built-a-hub-for-vetted-vaccination-resources-for-public-schools/>

<https://www.gettingsmart.com/2021/03/19/how-schools-can-promote-vaccination-and-address-hesitancy-a-10-point-plan-that-puts-equity-first/>

2023

“Design for Social Innovation: An Interdisciplinary Framework.” *Summit on Teaching and Learning*, Eberly Center, Carnegie Mellon University. 2023.

2024

Krishnaswami, L. A., Gonsher, I., Schmidt, R. & Rutter, W. (2024) “Positive Sum Design: Design methods and strategies” in Iarocchi, A. (ed.). *Applying Education in a Complex World. AMPS Proceedings Journal Series*, 33 (2): 92-100. ISSN 2398-9467.

Task forces, awards, and honors

MacArthur DML Trust Challenge winner and grant recipient (2015)

MacArthur funded Digital, Media and Learning Trust Challenge awarded universities, non-profits, and social-benefit companies to produce prototypes to explore building trust in the digital education environment. The award supported the design and development of an informed consent application, conference presentations, and best practice knowledge sharing of the project to the broader education community.

Office of Science and Technology Policy and Ideas42 (2012)

Behavioral economics summit

Worked with scholars at Ideas42 (founded by MacArthur Fellow Senthil Mullianathan) to design the conference materials to share behavioral economics and the concept of smart disclosures with over 150 leaders representing each of the Federal Agencies. Speakers included Nobel Laureate Richard Thaler, Obama Advisor and Harvard Legal Scholar Cass Sunstein, and the Archivist of the United States. The conference inspired direct impact across the Federal government, including members of the project team going on to found the office of Behavioral and Social Sciences at the Obama White House.

White House Office of Science and Technology Policy My Data Education (2012-13)

White House MyData 2012

One of 50 nationwide invited participants of the first White House MyData Education DataJam convened and attended by Todd Park (Chief Technology Officer of the US), the Chief Information Officer of the US, and the Head of the Digital Strategy office of the White House among other significant leaders. Arthi had the honor to present RyeCatcher to Dir. John Holdren, head of the Office of Science and Technology Policy, at the First US Datapalooza. Arthi participated pro-bono, while raising funds from the Gates Foundation for design and software development of the first prototype. (seen here)

White House MyData 2013

Participated in the second US Datapalooza to share the ongoing development of RyeCatcher.

National Day of Civic Hacking

One of 25 individuals selected to review a proposed open source database of data assets related to online surveys, polls, and other user generated information for the Federal Government. Findings and results informed subsequent data releases.

Gates Foundation (2012-13)

RyeCatcher: Funds to build a platform to connect students and families to local resources and service providers to support positive outcomes.

Partnership with Children (2012-13)

The NYC not-for-profit PwC, with support from the Robinhood Foundation, a project to adapt RyeCatcher to prototype features that enabled social workers to track services provided to students in the school setting. PwC used data from the platform to support funder reporting and compliance data requests.

ProUnitas (2013-14)

The not-for-profit ProUnitas, with support from the Houston Foundation, funded a project to adapt RyeCatcher to prototype features that enabled social workers to schedule services provided to students in the variety of school and non-school settings. ProUnitas used data from the platform to support a citywide campaign to raise funds and expand the program to serve more schools and students.

MacArthur/Gates “Learning Analytics to Enable Personalized Learning” task force (2013)

Wrote and designed a series of information graphics for the paper *Learning Analytics and User Experience*.

Aspen Institute “Connected Learning: Student at the Center” task force (2015)

Wrote and designed a series of information graphics for the report *Learner at the Center of a Networked World*. RyeCatcher featured p. 13? .

Invited lectures and conference panels

2013

SxSWedu, *Applications to support the Special Education Experience*

Washington State Charter Association Conference; Panel

2014

Parsons New School of Design, NYC; *Building the Digital Commons*; Panel participant

Rhode Island *Showcase* of school services

2014

MacArthur DML, San Francisco; *Informed Consent* (*Trust Challenge* recipient presentation)

Informed consent software application that leverages behavioral economics, information design, typography, and plain-English writing.

2015

SxSWedu; *Aspen Institute panel: Learners at the Center of a Networked World*

Berkman Center for Internet and Society, Harvard University; *RyeCatcher: Connecting Students to resources with informed consent*

2016

Watson Institute for Public Policy and International Affairs, Brown University;

[*Data Visualization in Public Policy*](#)

Digital Media Learning, Orlando

2019

Memphis Data Collective; *Building Communities of Trust in Education: Case study of Klondike-Smokey City*

Association of Latin American School Leaders; *RyeCatcher: Holistic education experience*

2022

[*Positive Sum Design*](#)

Center for Engineering, Innovation and Design, Yale University

2023

Positive Sum Design. Nelson Center for Entrepreneurship, Brown University.

Krishnaswami, L. A., Gonsler, I., Schmidt, R. & Rutter, W. (2023) "Positive Sum Design: Design methods and strategies". *Applying Education in a Complex World Conference*. Toronto, CA.