Equal Access to Justice for All People? An Investigation of the Factors Driving the Distribution of Civil Legal Aid Grants

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Abstract

Access to civil legal justice in the United States is largely an invisible issue, though it affects approximately 70 percent of low-income households each year. This study is concerned with investigating the political, need-based, and capacity factors that drive the allocation of civil legal aid grants to recipient organizations. In addition to traditional regression models, regularized and geographically weighted regression techniques are used to as a robustness check in this analysis. The innovative dataset of webscraped observations of civil legal aid grantmaking from 2015-2017 includes both federal and NGO actors, allowing for analysis of factors contributing to receipt of not only greater amounts of aid, but of public versus private aid as well. Organization and location-specific data provide for a granular analytical perspective, contributing further to the existing literature of distributive politics. Overall, this study finds that organizational capacity is the most influential factor across all models. Further, key findings reveal avenues for further research into civil legal aid and strategies for ensuring equal access to justice for all.

Introduction

In 1963, the landmark Supreme Court case *Gideon vs. Wainwright* set a precedent for the legal rights of low-income Americans. Upholding the Constitution's principle of equal access to justice for all people, individuals faced with a criminal charge assumed the right to a court-appointed lawyer for free. Yet, an invisible issue in the United States today is the lingering burden of the civil justice system on many individuals. Civil justice encompasses an array of significant and consequential issues, including guardianship and custody, housing law, and domestic violence.[1] In civil justice, there are no rules guaranteeing representation for low-income parties, resulting in large disparities in legal representation. In housing court, the disparity is as wide as 90 percent of landlords but only 10 percent of tenants having legal representation in cases as serious as eviction.[2]. Figure 1 presents a vignette of the impact of civil legal aid on individuals. For the individuals profiled, civil legal aid was crucial to their success in important legal matters, including child custody and maintenance of disability benefits. Further, these case studies highlight how intersections of need, such as being a low-income mother or veteran, can exacerbate one's legal problems and therefore need for civil legal aid.

Study into observed disparate access to civil legal resources has come to be known as the Justice Gap.[3] The Justice Gap describes how factors such as low socio-economic status, low English literacy, and living in a disaster-prone area, interact and lead to negative legal outcomes and exacerbate disparities.[4] To date, the most common solution to the Justice Gap has been targeting the problem with legal aid, or grants to legal clinics. Legal clinics provide clients with a spectrum of legal services, from legal information to Pro Bono case involvement. In 1974, the government recognized the importance of civil legal aid for ensuring equal access to justice for all Americans by creating the Legal Services Corporation (LSC), a nonprofit organization dedicated to legal aid grantmaking. The individual impact of legal aid is enormous. An estimated one million low-income people receive legal services from LSC each year.[5] Research into the Justice Gap, then, is contributing greatly to understanding the populations in need of civil legal services.

A less investigated area of civil legal services is the network of organizations involved in granting and administering legal aid and legal services. It is important to shed light on the institutional aspects of civil legal services to ensure legal aid reaches and is used effectively by the communities that need it the most. Specifically, it is important to investigate the relationship between the qualities or characteristics of recipient organizations and the amount ($) of grants they receive to get a better idea of the true factors that drive the allocation of civil legal aid.

This study, then, aims to gain insight into the main factors, at the level of recipient

[1]The Department of Justice. "Civil Legal Aid 101." The Department of Justice. October 28, 2018. https://www.justice.gov/olp/civil-legal-aid-101

[2]Desmond, Matthew. "Unaffordable America: Poverty, housing, and eviction." Fast Focus: Institute for Research on Poverty 22, no. 22 (2015): 1-6.

[3]Legal Services Corporation. The Justice Gap: Measuring the Unmet Civil Legal Needs for Low Income Americans. Prepared by NORC at the University of Chicago for Legal Services Corporation. June 2017. https://www.lsc.gov/sites/default/files/images/TheJusticeGap-FullReport.pdf

[4]Ibid.

[5]Ibid.

organization, driving the allocation of civil legal aid. In addition to making substantive contributions, this study aims to use innovative data and methods to contribute to the literature on civil legal services and distributive politics. The findings of this study show that organizational capacity is the most influential factor in civil legal aid distribution overall. In addition, political factors are shown to be influential in allocation of federal civil legal aid and need-based factors are shown to have inconsistent influence, highlighting the need for federal distributors of civil legal aid to re-operationalize the idea of civil legal aid need.

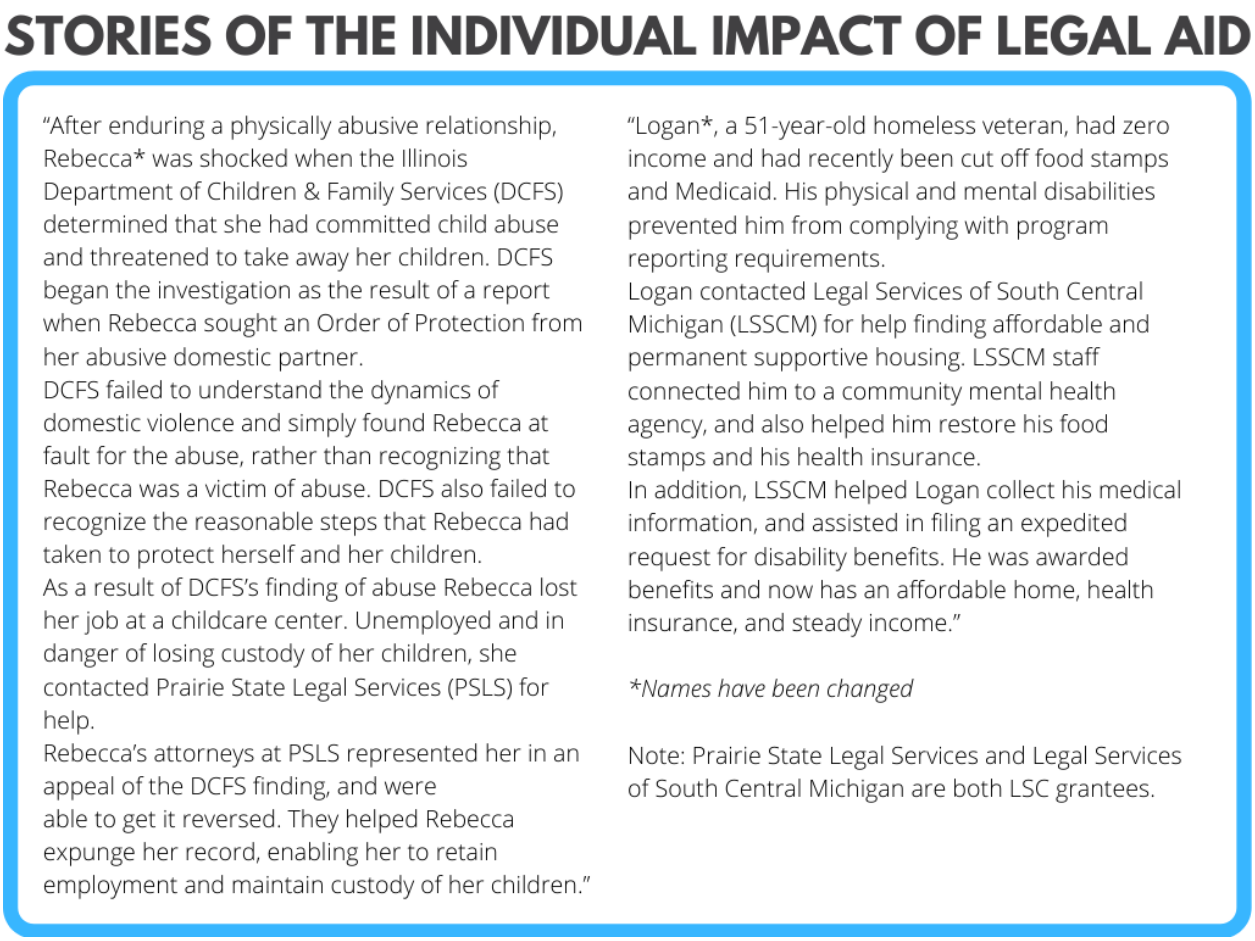

Figure 1: Stories of the individual impact of civil legal aid.

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[6]From Stories of the Individual Impact of Legal Aid: Legal Services Corporation. "Helping Veterans Access Food and Health Benefits." Nd. https://www.lsc.gov/helping-% Veterans-access-food-and-health-benefits-michiganLegal Services Corporation.
"Domestic Violence Survivor Wins Custody." Ndhttps://www.lsc.gov/domestic-violence-survivor-wins-custody-illinois

Funding Legal Services

Essential to the objective of this study is understanding how legal aid is funded. As previously mentioned, LSC is a publicly-established source of legal aid for organizations, being the largest funder of civil legal aid.[7] LSC is a quasi-autonomous non-governmental organization (QUANGO), operating independently as a nonprofit while receiving the majority of its funding from Congress and being subject to oversight. It is estimated that LSC funds 25 percent of legal aid organizations.[8] Apart from LSC, there are several private, as well as state-based, entities involved in civil legal aid grantmaking. Because this network of donors is relatively fragmented, there has been little research and effort to describe the total breadth of civil legal aid grantmaking outside of LSC.

Funding from Legal Services Corporation

As shown in Figure 2, LSC receives the majority of its funding from Congress in the appropriations process. LSC is included in the appropriations bill for Commerce, Justice, Science, and related agencies (CJS). While the exact amount of funding appropriated to LSC each year varies slightly, the number has hovered around $ 350 million for the past ten years.[9] The majority of LSC's Congressional budget goes towards Basic Field Grants, which are the standard grants allocated to legal aid organizations throughout the United States through a competitive grants process. Basic Field Grants are designed to "provide funding to support delivery of high-quality civil legal services and access to justice to low-income people." [10] Organizations compete for LSC grants with other organizations in their designated geographic service area, with only one organization from each service area receiving a grant. In 2018, 133 legal aid organizations received funding from LSC for Basic Field grants. The amount ($) of LSC grants themselves is calculated based on the geographic service area, using Census data to estimate the total poverty population. The overall grant award, then, is calculated based on the fiscal allocation by Congress and the proportion of population below 125 percent of the poverty line in a given service area.[11] LSC places such emphasis on poverty population because it is the threshold used to determine eligibility for LSC funded legal services, as only individuals below 125 percent of the poverty threshold are eligible.[12]

[7]The Department of Justice. "Civil Legal Aid 101."

[8]Ibid.

[9]Legal Services Corporation. "Congressional Appropriations." Nd. https://www.lsc.gov/about-lsc/who-we-are/Congressional-oversight/Congressional-appropriations

[10]Legal Services Corporation. "Basic Field Grant." Nd. https://www.lsc.gov/grants-grantee-resources/our-grant-programs/basic-field-grant

[11]Ibid.

Legal Services Corporation. "Request for Proposals for 2020 Basic Field Grant Funding." 2019. https://www.lsc.gov/sites/default/files/attach/2019/04/LSC_2020_Request_for_Proposals.pdf

Legal Services Corporation. "LSC 2019 Grant Awards." Nd.https://www.lsc.gov/grants-grantee-resources/our-grant-programs/basic-field-grant/lsc-2019-grant-awards

Legal Services Corporation. "Estimated Census Adjustment of LSC Grantees' 2014 Funding." Nd.https://www.lsc.gov/estimated-census-adjustment-lsc-grantees-2014-funding

[12]Electronic Code of Federal Regulations. "Part 1611: Financial Eligibility." August 8, 2019. https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=& n=45y4.1.3.11.12& r=PART& ty=HTML#ap45.4.1611_19.a

Organizations receiving grants from LSC, like many other types of grants, are subject to several restrictions and reporting requirements involving the use of the funds.

Civil legal aid funding from non-LSC sources

LSC is one major donor of civil legal aid to legal aid organizations, but many other types of donors exist. Figure 2 displays the other major types of civil legal aid funders outside of LSC at the national, state, and local levels. Apart from LSC, the majority of funding sources include organizations such as state bar associations, state government-based legal aid funding, national charities and foundations, as well as state-based charities and foundations. Because the grant network is fragmented across a variety of types of organizations, there has been little success in fully describing the breadth of non-LSC funding for civil legal aid. In this way, while LSC claims the title of single largest funder of civil legal aid in America, the total amount of funding from all donors is unknown. [13]

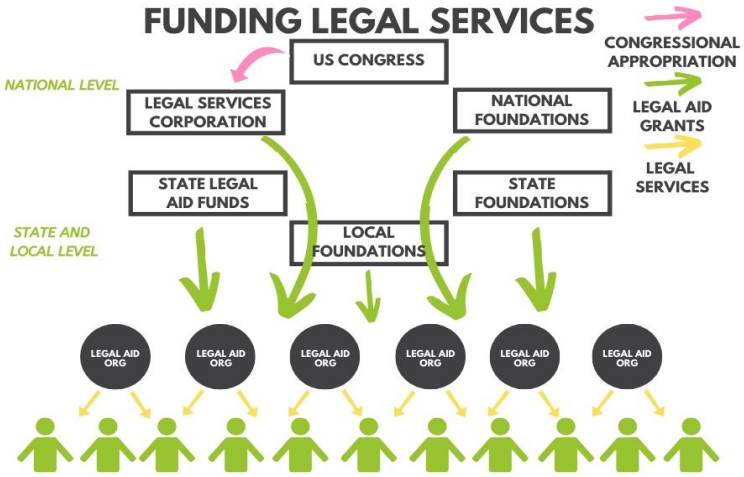

Figure 2: Summary of the organizations funding civil legal aid organizations.

Identifying Factors Driving Grant Allocation

This study, then, aims to understand more about the funding of civil legal aid at the level of recipient organization. Specifically, this study aims to identify the organizational factors which contribute to receipt of greater amounts ($) of aid from all donors, aid from LSC, and amount ($) of aid from LSC. The Justice Gap has documented the factors which contribute to greater civil legal need among individuals. LSC as well seems to be centrally concerned with the question of "need," folding poverty population into their grant formula. In this way,

[13]Legal Services Corporation. "Who We Are." N.d. https://www.lsc.gov/about-lsc/who-we-are

this study aims to investigate if community need is a driving factor in civil legal aid grant funding, both from the network overall and LSC specifically.

The idea of "need" in the grantmaking process, though, is often at odds with the capacity of organizations to deliver effective results through grants. Moreover, as several studies the literature on distributive politics have detailed, Congressional appropriation of federal resources is not always entirely driven by need and capacity in the United States. Indeed, as previous studies have indicated, political factors have a profound effect that often overtakes demand-side interests. Moreover, by looking at several different aid allocation outcomes, including amount ($) and source, this study will be able to determine how the factors that influence grantmaking may be different between public and private donors.

Demand-side factors

For the issue of civil legal aid, several factors, including not only community need for civil legal aid, but organizational and environmental capacity, comprise the demand-side. Community need attempts to operationalize community-based indicators of civil legal aid need based on the available literature.[14] Organizational and environmental capacity, in this case, describe both the ability of an organization to deliver civil legal services and the ability of the surrounding environment to promote this activity. While some aspects of community need and environmental capacity overlap, the distinction is that community need is specific to indicators of civil legal aid need, while environmental capacity describes the relationship between the affluence or resource wealth in a community with private and public receipt of aid.

Operationalizing Recipient Organization Community Need

As previously mentioned, poverty level is one of the greatest indicators of need for civil legal aid. According to the Justice Gap survey report, 71 percent of low-income households experienced at least one civil legal problem in 2016, and, because of a lack of resources, half of low-income Americans who seek legal aid for their issues will receive limited or no help.[15] While poverty overall can be considered a barrier to justice, as it directly impacts an individual's ability to afford legal counsel or qualify for aid, there are other practical barriers to justice associated with being in poverty.[16] For example, household access to high-speed internet can present a huge barrier for populations looking to access legal resources online.[17]

Though population density affects civil legal aid need in an area, the relationship is less straightforward than other indicators. More densely populated areas, by virtue of

[14]Need is operationalized differently depending on the issue being studied; for example, Lee (2000, 2003, 2004) focused on transportation legislation, most often operationalizing need as miles of federal highway. Lazarus (2010), looking at the distribution of earmarks in all FY 2008 Appropriations bills, operationalized need differently depending on the agency receiving funding; for example, containing a NASA installation for NASA funding, or percent of residents employed in farming for Department of Agriculture.

[15]Legal Services Corporation. The Justice Gap.

[16]Self-Represented Litigation Network. "America's Civil Courts: Whom do We Serve?" 2019. https://srln.maps.arcgis.com/apps/MapJournal/index.html?appid=7bed22dba4ec45f281b766181b862156

[17]Ibid.

having more people, often have a greater need for civil legal aid. According to the Self-Represented Litigation Network, the optimal method for aid delivery in this scenario is to create centrally located service centers. On the other hand, more sparsely populated rural counties, while perhaps having less need overall, may be troubled by geographic spread of resources, therefore needing flexible e-service options.[18] According to the Justice Gap, 75 percent of rural households had at least one civil legal problem in the past year.[19] Therefore, it is likely that population density needs to be understood coupled with intersecting indicators of civil legal aid need to understand the full picture of demand for a community.

Education level can be an indicator of community need for access to civil justice. Amount of education correlates to literacy and comprehension levels, which are critical factors to address in providing comprehensive civil legal aid. Because a large number of individuals, especially those at or near the poverty line, represent themselves in civil legal cases, it can be extremely challenging to navigate complex court systems with low literacy.[20]

Similar to education level, language can greatly a population's ability to comprehend, understand, and navigate the legal system, therefore contributing to a community's civil legal aid need. At a basic level, having a language other than English as a primary language is an indicator of civil legal need because of low English literacy and comprehension levels, which is important for being able to effectively access available legal aid resources or effectively represent oneself.[21]

Race, ethnicity, and being foreign-born can also greatly affect a community's need for civil legal aid. Though the plurality (44 percent) of low-income Americans identify as white with no Hispanic origin, there are several important factors to consider that make people of color less likely to access civil legal aid .[22] One study found that low income blacks are less likely to seek civil legal aid than their white counterparts because of previous negative experience with the criminal justice system, distrust of institutions overall, and the value of self-reliance.[23] In addition to nonwhite individuals, foreign-born individuals also experience certain barriers to accessing justice. Communities with higher foreign-born populations may have greater civil legal aid need not just because of a language barrier, but because of a cultural barrier to a foreign justice system.[24] Therefore, race, ethnicity, and being foreign-born are important indicators of the overall need for civil legal aid, considering how they play into an individual's perception and empowerment to access the right to equal justice.

Housing can greatly affect a community's need for civil legal aid, most overtly in the area of housing law. As previously mentioned, landlord-tenant court has one of the widest legal representation disparities, with 90 percent of landlords being represented as opposed to 10 percent of tenants.[25] Housing cases encompass a variety of issues, including loans to repair, foreclosure, eviction, unsafe housing, and access to subsidized housing benefits.[26] In

[18]Ibid.

[19]Legal Services Corporation. The Justice Gap.

[20]Ibid.

[21]Legal Services Corporation. The Justice Gap.Self-Represented Litigation Network. "America's Civil Courts"

[22]Legal Services Corporation. The Justice Gap.

[23]Greene, Sara Sternberg. "Race, class, and access to civil justice." Iowa L. Rev. 101 (2015): 1263.

[24]Self-Represented Litigation Network. "America's Civil Courts"

[25]Desmond, Matthew. "Unaffordable America"

[26]The Justice Department. "Civil Legal Aid 101."

this way, communities with higher populations of renters are likely in need of civil legal aid.

According to the Justice Gap, there are a handful of vulnerable populations who have greater civil legal aid need.[27] The "Special Focus" populations identified included low-income seniors, persons with disabilities, veterans, parents and guardians of children, rural residents and survivors of domestic violence or sexual assault.[28] These populations are particularly vulnerable to encountering civil legal issues, the most prevalent being Health, Consumer/Finance, and Income Maintenance.[29] Communities with higher populations of these identified vulnerable groups, therefore, have a greater overall need for civil legal aid.

Operationalizing Recipient Organization Capacity

Recipient organization capacity and community need makeup the demand-side factors that may influence the distribution of civil legal aid. Recipient organization capacity attempts to describe the applied organizational and environmental factors that affect the allocation of civil legal aid. Capacity is critical to understanding the distribution of aid because donors, whether private or public, are ultimately concerned with their grants being used effectively and producing results.[30] Capacity as a factor in grant distribution has been connected to political theory through delegation theory, which describes how government agencies pass aid to organizations that cannot deliver results but where there are political gains to be made.[31] In the case of civil legal aid, then, both public and private actors may have several reasons to be motivated by capacity as a driving factor for aid allocation.

Organizational Capacity Organizational capacity describes the factors within an organization that influence the receipt of grants. Organizational capacity is directly relevant to the grantmaking and receiving process, as organizations are almost always required to provide information on organizational capacity in their grant proposals and applications.[32] Capacity can be measured by organizational revenue, number of employees, or number of volunteers. Donor organizations use these statistics to understand if an organization is a worthwhile investment. Moreover, organizations with greater capacity can apply to more grants and grants with intensive applications, which often yield the highest amounts of aid.[33] Grant recipient organizations are also subject to strict reporting requirements, which are easier for organizations with greater capacity to meet.[34] In the case of civil legal aid, the reporting requirements for LSC grants are notoriously strenuous and the application process is infamously monopolized by certain legal aid organizations, making capacity a relevant factor in

[27]Legal Services Corporation. The Justice Gap.

[28]Ibid.

[29]Legal Services Corporation. The Justice Gap.Self-Represented Litigation Network. "America's Civil Courts"

[30]Frumkin, Peter. On being nonprofit.

[31]Nicholson-Crotty, Sean, and Jill Nicholson-Crotty. "Politics, capacity, and pass-through decisions in the American states: Evidence from the American Recovery and Reinvestment Act." Publius: The Journal of Federalism 45, no. 3 (2015): 475-494.

[32]Frumkin, Peter. On being nonprofit.

[33]Berry, Jeffrey M. A voice for nonprofits. Brookings Institution Press, 2003.Frumkin, Peter. On being nonprofit.Lyons, Christina L. "Nonprofit Groups and Partisan Politics." CQ Researcher(24) 2014: 963.

[34]Frumkin, Peter. On being nonprofit.

determining aid allocation.[35]

Environmental Capacity The other main piece of defining recipient organization capacity is the environmental capacity of organizations to receive grants, or factors surrounding an institution that can influence ability to receive grants. Much of the literature on environmental capacity focuses on the idea of organizational ecology, "which (determines) the ability of organizations to obtain resources and hence survive." [36] In one study on receipt of government revenue among human service organizations in Los Angeles, environmental capacity is provided as a framework for thinking about the geographic relationship between an organization and environmental resources and competition.[37]

Environmental resources, or the average local income and racial and ethnic makeup of the area surrounding a service organization, influence receipt of government grants because of their relationship with local contributions. Operating in a resource-poor environment means fewer local contributions and, therefore, a greater need for government support.[38] In this way, this theory suggests that organizations in resource-rich areas are more likely to receive local private donations, whereas organizations in resource-poor areas will look to government funders to match the demand for aid. In the case of civil legal aid, this suggests that LSC is more likely to take environmental capacity factors into account as opposed to the grantmaking network as a whole.

Competition among organizations, or great spatial proximity of organizations to each other, can affect funding in several ways. Greater competition puts a strain on the ability to receive funding because several organizations may be performing the same service for the same population, therefore demanding the same funds.[39] Moreover, the ability of organizations to gain capacity by hiring more talented employees or serve a large number of clients is greatly hindered, as there are several local options.[40] In this way, competition is another environmental factor that may influence the ability of organizations to receive civil legal aid.

Political factors

In political science, theories of distributive politics attempt to describe how not only how government resources are allocated, but why they are allocated in that way.[41] Often, political explanations for resource allocation are juxtaposed against demand-side explanations, showing that political factors often drive resource allocation to inefficiency. While the most common distributive politics explanations focus on political factors in legislative bodies, as

[35]Legal Services Corporation. "Request for Proposals... "

[36]Garrow, Eve E. "Receipt of government revenue among nonprofit human service organizations." Journal of Public Administration Research and Theory 21, no. 3 (2010): 446.

[37]Ibid.

[38]Ibid.

" Hall, Jeremy L. "The forgotten regional organizations: Creating capacity for economic development." Public Administration Review 68, no. 1 (2008): 110-125.

[39]Garrow, Eve E. "Receipt of government revenue... "

[40]Ibid.

[41]Golden, Miriam, and Brian Min. "Distributive politics around the world." Annual Review of Political Science 16 (2013).

the appropriating committees, some theories describe the power of the executive branch in driving decisions of resource allocation.

Because this analysis is focusing on civil legal aid, it is important to note that no overarching conclusions about distributive politics can be made based on this study alone. Indeed, scholars have shown that patterns of distributive politics can vary based on the resources being studied.[42] It remains important, though, to understand the political factors related to civil legal aid distribution in isolation to draw comparisons to other resources allocated by the government.

Operationalizing recipient organization political factors

As previously mentioned, most theories of distributive politics focus on factors of legislative politics that drive resource allocation. Scholars posit several explanations for political factors that motivate members of Congress, including committee leadership. One of the most notable theories of distributive politics is "pork-barrel" politics, which posits that individuals in positions of power in government, particularly legislatures, are inclined to favor legislation that benefits their specific geographic constituency ("bringing home the pork"). In this way, pork-barrel is a form of patronage driven by electoral politics, where an elected representative pays their constituency through political favors in the form of beneficial policies, often to garner popularity or secure future electability.[43] Congress has been accused of using public services as political patronage in the past, including the case of Americorps, which was accused of "(funneling) stipend money to organizations working in key political regions." [44] Therefore, members of Congress may be using public civil legal aid as a form of pork to gain electoral advantage.

A commonly posited way political factors in Congress affect the distribution of resources is through committee membership and leadership. Because members of Congress have power in their committees, and perhaps have positions of power within those committees, they can exercise influence over the ultimate decisions of the committee.[45] In the case of civil legal aid allocation, it is important to look at the relationship between the organizations located in a Congressional district represented by a member of LSC's appropriating committee to see if there are political biases involved with public aid allocation. Additionally, it is important to look at if the member of Congress is the ranking member on the committee to understand if having power on the appropriating committee makes a difference in receipt of public aid.

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[42]Kramon, Eric, and Daniel N. Posner. "Who benefits from distributive politics? How the outcome one studies affects the answer one gets." Perspectives on Politics 11, no. 2 (2013): 461-474.

[43]Aidt, Toke S., and Julia Shvets. "Distributive politics and electoral incentives: Evidence from seven US state legislatures." American Economic Journal: Economic Policy 4, no. 3 (2012): 1-29.

Lee, Frances E. "Senate representation and coalition building in distributive politics." American Political Science Review 94, no. 1 (2000): 59-72.

Lee, Frances E. "Geographic politics in the US House of Representatives: Coalition building and distribution of benefits." American Journal of Political Science 47, no. 4 (2003): 714-728.

Lee, Frances E. "Bicameralism and geographic politics: Allocating funds in the House and Senate." Legislative Studies Quarterly 29, no. 2 (2004): 185-213.

[44]Frumkin, Peter. On being nonprofit: A conceptual and policy primer. Harvard University Press, 2009.

[45]Lee, Frances E. "Senate representation and coalition building... "

Lee, Frances E. "Geographic politics in the US House of Representatives... "

Executive

Though one might suspect that Congress, having direct power of the purse, might exert the most influence over budgetary decisions, several studies have shown that the executive branch may play a significant role in influencing the process. Executive influence over resource allocation has been theorized to include both the president and the larger executive bureaucracy.[46] Furthermore, the relationship is most often posited to originate from either electoral support, party patronage, or ideological similarities.[47] Overall, though, the driving sentiment behind theories of executive influence over resource allocation is the "leapfrog" characteristic of the relationship between executive actors and recipient organizations, exerting an influence that passes over the Congressional members writing appropriation bills. In the case of civil legal aid, political bias may be shown towards favorable states, and therefore their local organizations. For example, public civil legal aid may be funneled to states where the governor and president are of the same political party.

Figure 3 summarizes the main recipient organization characteristics or factors driving the allocation of civil legal aid. This study, then, aims to parse through these factors to determine which are the most influential in the allocation of civil legal aid. Furthermore, by analyzing grants from all donors and grants from LSC only, this study aims to find and significant differences between the way civil legal aid grants at large and federal grants are allocated.

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[46]Berry, Christopher R., Barry C. Burden, and William G. Howell. "The president and the distribution of federal spending." American Political Science Review 104, no. 4 (2010): 783-799.
Bertelli, Anthony M., and Christian R. Grose. "Secretaries of pork? A new theory of distributive public policy." The Journal of Politics 71, no. 3 (2009): 926-945.
Larcinese, Valentino, Leonzio Rizzo, and Cecilia Testa. "Allocating the US federal budget to the states: The impact of the president." The Journal of Politics 68, no. 2 (2006): 447-456.

[47]Berry, Burden, and Howell. "The president and the distribution... "
Bertelli and Grose. "Secretaries of pork?"
Larcinese, Rizzo, and Testa. "Allocating the US federal budget... "

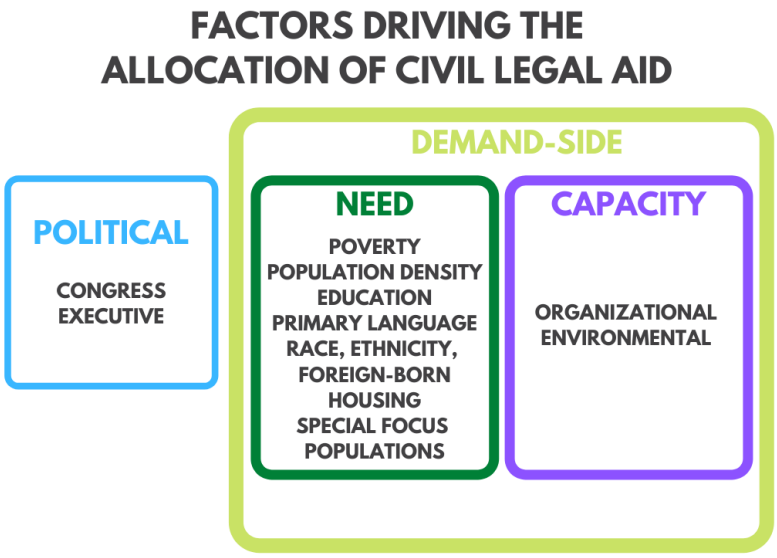

Figure 3: Summary of the factors driving the allocation of civil legal aid.

Hypotheses

Hypothesis 1: Capacity will be the most influential factor in amount ($) of civil legal aid grants received from all donors. Because the entire grant network includes private donors, funding organizations may have more concern with the ability of grantee organizations to use grants properly. Moreover, donors will likely give grants in higher amounts ($) to recipient organizations with higher capacity.

Hypothesis 2: Capacity will be the most influential factor in the receipt of grants from LSC. Because the reporting requirements for LSC grants are notoriously strenuous, capacity will be an influential factor in determining if an organization receives aid from LSC. Additionally, because a single grantee usually dominates the application process within a certain geographic service area year after year, capacity through demonstrated ability to handle grants is likely an influential factor.

Hypothesis 3: Community need-based factors will be the most influential factors in civil legal aid allocation for the amount ($) of grants from LSC. Because poverty population is the only factor LSC claims is taken into account in their grant formula, poverty population and related need-based factors will be the most influential for this outcome.

Hypothesis 4: Political factors will not be influential for any of the outcomes of interest. Political factors will not be influential in the amount ($) of grants organizations recieve from all donors because of the inclusion of private funders. Because LSC is one-step removed from the appropriations process, it is unlikely that legislative or executive influence will be detectable in receipt of grants from LSC and amount ($) of grants received from LSC.

Data and Methods

The aim of this study was to analyze the most influential factors of recipient organizations in allocation of civil legal aid by public and private donors. To this end, data on civil legal aid grants was collected and a quantitative approach was selected to analyze the data. Based on location, recipient organizations were spatially joined with political and census datasets to test for organizational characteristics influential in grant allocation. A complementary quantitative approach was used to analyze the data to ensure a nuanced and holistic analysis.

Data Collection and Preprocessing

The data for this study was collected from the Foundation Directory Online, a database containing observations of grantmaking for a variety of sectors including health, the environment, and legal aid. To narrow down the analysis, the database was only queried for legal aid grants with subjects within LSC grant restrictions to later compare influential factors in public versus private donations. The database was also queried only for the years in which there was near-comprehensive data on all civil legal aid grants for that year, which was 2015-2017. The results of this search were webscraped using Selenium Webdriver through Python, creating a datatable of information at the grant level of recipient organizations, grantmakers, and grant information.

Among the information attained was organization Employer Identification Number (EIN), a unique identifier used by the IRS for tax administration. The obtained EINs were fed into ProPublica's nonprofit API so that organization information, including annual revenue,[48] could be coded into the dataset. Additionally, addresses for each business were folded into the dataset and geocoded using the TAMU geocoder.

Next, the observations of grantmaking were aggregated based on recipient organization and year, counting the total amount ($) of grants each organization received from all donors, whether or not they received grants from LSC, and the total amount ($) of grants received from LSC. Then, the explanatory variables were folded into the dataset. For the political explanatory variables, the recipient organizations were merged with shapefiles of the 113th and 114th Congress, and organizations with a representative or chair in the CJS Appropriations Committee were coded, as well as governor presidential party alignment. For the demographic information, data was merged with shapefiles from ESRI Online. Finally, the competition variables were created by using the Aggregate Points tool from ArcMap, where clusters of three or more points in a given area (in this case, 10 and 30 miles) are aggregated to form a polygon. Organizations that were located in a polygon after this procedure were coded in the dataset.

Table 1: Summary of Variables

Variable	Description
Dependent variables	
Amount ($) of Grants, all Donors	Logged amount ($) of all legal aid grants received in a year
Receipt from LSC (dummy)	Dummy variable, if the organization received a grant from LSC in a year
Amount ($) of Grants, LSC only	If LSC = 1, Logged amount ($) of legal aid grants received from LSC in a year
Organization capacity	
Organization revenue	Logged average of total revenue reported in all IRS e-filings
Competition (10 miles)	Dummy, if the organization is within 10 miles of two or more organizations
Competition (30 miles)	Dummy, if the organization is within 30 miles of two or more organizations
Political factors	
House Rep. in CJS	Dummy, if the organization had a representative in the house CJS appropriating committee in a year
Ranking House Rep. in CJS	Dummy, if the organization had the ranking representative in the house CJS appropriating committee in a year
Senator in CJS	Dummy, if the organization had a representative in the senate CJS appropriating committee in a year
Ranking Senator in CJS	Dummy, if the organization had the ranking representative in the senate CJS appropriating committee in a year
Gov. Pres. party align	Dummy, if the organization's state Governor was the same party as the President
Need-based factors	
Population density	# of people per square miles; Esri Demographics 2016
% Highschool grad.	% of population 25 years and older who graduated high school; ACS 2014 5-year
% Foreign born	% of population who are foreign-born; ACS 2014 5-year
% Non-English households	% of population who do not speak English at home; ACS 2014 5-year
% Veteran	% of civilian population 18 and older who are veterans; ACS 2014 5-year
% Home renters	% of occupied housing units that are renter occupied; ACS 2014 5-year
% High-speed internet households	% of Households connected to High-Speed Broadband; FCC 2015
100% Poverty population	% of the population who are below 100 percent of the federal poverty guidelines; ACS 2014 5-year
125% Poverty population	% of the population who are below 125 percent of the federal poverty guidelines; ACS 2014 5-year
% Children	% of population who are under age 18; ACS 2014 5-year
% Seniors	% of population who are over 59; ACS 2014 5-year
% Rural	% of population who live in rural areas; Census 2010
% Minority	% of population who are minorities; Census 2010

Variables

Correlation Matrix

To better understand broad patterns in the data before heading into inferential analysis, a correlation matrix of the variables was created. Table 2 displays a correlation matrix between the relevant variables and the three outcomes of interest. Looking at each variable category at a whole, the capacity variables overall show the highest correlation with the dependent variables. The political variables show little evidence of being strongly correlated with the dependent variables. In fact, several political factors have correlation coefficients suggesting a negative relationship with the outcomes of interest. Turning to the need-based variables, there is mixed support for influence. While several factors, like being foreign born, not speaking English at home, and being a minority are highly correlated with the outcomes, they are not correlated in the expected direction. Overall, the correlation analysis suggests that organizational capacity factors will be the most influential on the outcomes of interest. Moreover, it suggests that political factors will have little significance. Finally, there is mixed support for the overall influence of need-based factors, suggesting a nuanced analysis of these factors is necessary to tease out their importance in determining allocation of civil legal aid.

Methods

This analysis used OLS, logistic, penalized and geographically weighted regression to model the effect of the explanatory factors on the three outcomes of interest. The complementary methods approach of this study allows for a nuanced analysis of the data, where the strengths and weaknesses of several methods are balanced out to understand a more holistic picture of civil legal aid allocation.

OLS and logistic regression

To begin, all variables were analyzed using OLS and logistic regression. For dependent variables with a continuous outcome (Amount ($) grants from all donors and amount ($) grants from LSC) OLS was used and for the dependent variable with a binary outcome (Receipt of aid from LSC) logistic regression was used. OLS and logistic regression have the distinct advantage of being reputable tools for analysis, as well as being subject to less variance as opposed to penalized regression. The results of the OLS and logistic regressions were both analyzed independently and compared to subsequent penalized regression results, adding to the overall exploration of the data.

[48] Because there was great variation in available data for organization revenue, each recipient organizations's revenue figure is the average revenue for all years available. The sum of grants for a given year were then subtracted from the average revenue figure to avoid measuring the dependent variable on both sides of the equation. In this way, revenue describes an organization's average revenue over available years minus any civil legal aid grants for a given year.

Table 2: Correlation Matrix

	Amount ($) of Grants from All Donors	Receipt of Grants from LSC (dummy)	Amount ($) of Grants from LSC
Organizational capacity factors			
Organization revenue	**0.35******	**0.31********	**0.28********
Competition (10 miles)	0.04	**-0.11********	-0.03
Competition (30 miles)	0.05*	**-0.12********	-0.05*
Political factors			
House Rep. in CJS	-0.01	-0.02	0.02
Ranking House Rep. in CJS	0.01	-0.02	-0.02
Senator in CJS	-0.03	-0.06**	-0.02
Ranking Senator in CJS	-0.01	-0.02	0.01
Gov. Pres. party align	0.00	0.00	-0.03
Need-based factors			
Population density	0.03	-0.05*	-0.04*
% Highschool grad.	-0.02	0.04	-0.05*
% Foreign born	0.04*	-0.08***	0.04
% Non-English households	0.05*	-0.07***	0.06**
% Veteran	**-0.08********	0.03	-0.04*
% Home renters	**0.09********	0.00	0.03
% High-speed internet households	**0.17********	**0.09********	**0.09********
100% Poverty population	0.03	0.06**	0.06**
125% Poverty population	0.02	0.05*	0.06**
% Children	0.03	0.03	**0.12********
% Seniors	**-0.11********	-0.04*	**-0.13********
% Rural	**0.19********	-0.05*	**-0.11********
% Minority	**0.09********	-0.03	**0.10********

Note: Pearson correlation coefficients; **p < .0001 '****'**; p < .001 '***', p < .01 '**', p < .05 '*'

Penalized regression

After analyzing the results of the OLS and logit models, penalized regression was used as a robustness check for the results. Penalized regression was employed to complement OLS and logistic regression, combating weaknessess in specification of the previous models. Because this analysis was sifting through a high number of explanatory features, penalized regression was particularly helpful for seeing what variables exerted a strong influence over the model. The three types of penalized regression used in this analysis are LASSO, Ridge, and Elastic net.

Penalized regression works by penalizing coefficients in the regression in an attempt to solve the bias-variance tradeoff. In OLS regression, bias is reduced at the expense of variance, often resulting in models that are over-fit with poor predictive power. Specifically, OLS models perform poorly when there is a high likelihood of collinearly or there are a great number of predictors. Penalized regression offers an excellent complement to OLS regression, introducing bias to reduce variance. In penalized regression, collinearity is easily recognizable and patterns in the data are more generalized to get a holistic picture of the explanatory factors' effect on the outcome of interest.[49]

The three types of penalized regression used in this analysis are LASSO, Ridge, and Elastic net. All three methods have two tuned parameters, α, which determines the method of regression penalty, and λ, which determines the extent of the penalty. In a LASSO (least absolute shrinkage and selection operator), $\alpha = 1$ and the sum of absolute values of coefficients are penalized, zeroing uninfluential factors out of the equation. In a Ridge, $\alpha = 0$, penalizing the sum of squared coefficients, setting uninfluential variables asymptotically close to zero. In an Elastic net, α is tuned for, allowing for the maintenance of model complexity while some variables are zeroed out. The optimal λ is tuned for in all models, with increasing values of λ increasing the extent of the penalty.

All in all, there is not much consensus over which penalized regression approach is best. The three approaches are quite similar and generally produce similar results. Though, it is important to note that LASSO usually performs better when a small number of variables influence the model, whereas Ridge works best when many predictors influence an outcome.

Each penalized regression model was internally tested for mean squared error (MSE) (Tables A1, A4, and A7). This was found by subtracting their model value from their actual value, providing an insight into which model best fits the data at hand. The models were graphed with λ on the x-axis and the model coefficients on the y-axis. The optimal λ found in cross-validation is pictured by the solid black vertical line. The variables are represented in different colors (Figures A1, A2, and A3). In the Results section, the coefficients of model with the lowest tested MSE are presented. Full results are available in the Appendix.

Geographically weighted regression

After the penalized and OLS regression analyses, the variables were analyzed using geographically weighted regression (GWR) analysis. GWR was helpful in this study in sorting through variables with model behavior contradictory to theoretical explanation. GWR is a

[49]Hindman, Matthew. "Building better models: Prediction, replication, and machine learning in the social sciences." The ANNALS of the American Academy of Political and Social Science 659, no. 1 (2015): 48-62.

technique used to assess spatial differences in outcomes of interest. In this study, GWR is used to make sense of contradicting explanations of legal aid allocation and their relationships across space. Essentially, GWR is a local regression model, as opposed to the previous global regression models. GWR allows coefficients for each variable to vary based on location, modeling several local linear models in clusters. This allows for the importance of spatial context to be emphasized, creating nuance in the overall results.[50] The major drawback of GWR, though, is that, by its nature, local variables are often correlated, creating models with high interference. In this way, the complementary approach of this study allows for the results of GWR to be compared and balanced with the other statistical approaches. Scholars have been working on solving the issues of GWR by developing new models, including models penalizing the regression coefficients in GWR, such as geographically weighted LASSOs and Ridge regressions. [51] Because, by nature, LSC recipient organizations are spread out geographically, a GWR analysis was not possible for the final model, testing the dependent variable of Amount ($) of aid from LSC. Selected GWR coefficients are graphed in the Results section and full results are in the Appendix (Tables A10 and A11).

[50]Agnew, John. "Mapping politics: how context counts in electoral geography." Political geography 15, no. 2 (1996): 129-146.

[51]Wheeler, David C. "Simultaneous coefficient penalization and model selection in geographically weighted regression: the geographically weighted lasso." Environment and planning A 41, no. 3 (2009): 722-742.
Bárcena, Maria Jesús, Patricia Menéndez, María Blanca Palacios, and Fernando Tusell. "Alleviating the effect of collinearity in geographically weighted regression." Journal of Geographical Systems 16, no. 4 (2014): 441-466.

Results

The goal of this paper was to analyze the influence of relevant factors of recipient organizations in allocation of civil legal aid by public and private donors. The analysis taken was a complementary quantitative approach. Overall, several key findings emerged from the models.

Key Finding 1: Organizational capacity factors were consistently significant across all models

The first key finding of this study was the significance of organizational capacity factors across all models. Table 3 shows the results of the OLS and logistic regression models. Of all the factors, organization revenue is the only one with consistently high significance across all three models. Tables 4 and 5 show the results of the penalized regression models for amount ($) of grants from all donors and receipt of grants from LSC (dummy). In these analyses as well, organization revenue is the most influential factor, having the greatest magnitude coefficient. Likewise, the competition variables are also highly influential in these models, having consistently the second or third highest magnitude coefficient. Table 4 shows the results of the penalized regression model for amount ($) of grants from LSC. Interestingly, this is the only penalized regression model where organization revenue was not the most influential factor overall. Moreover, this model shows that competition within 10 miles is in fact more influential than organization revenue, contradictory to the results of the previous OLS and logistic regression models. Overall, these results support Hypothesis 1, showing that organizational capacity factors were the most important in amount ($) of grants recieved from all donors. Additionally, Hypothesis 2 is supported, as organizational capacity factors were also the most influential in receipt of grants from LSC (dummy).

Table 3: Results of OLS and Logistic Regression Models

	Dependent variable:		
	Total Amount ($) of Grants from all Donors	Receipt of Grants from LSC (dummy)	Total Amount ($) of Grants from LSC
	OLS	*logistic*	*OLS*
	(1)	(2)	(3)
Organizational capacity factors			
Organization revenue	**0.763*** **	**1.165*** **	**0.196*** **
	(0.043)	(0.072)	(0.029)
Competition (10 miles)	−0.319	−0.677*	0.111
	(0.254)	(0.408)	(0.167)
Competition (30 miles)	0.017	**-0.941*** **	0.037
	(0.222)	(0.310)	(0.129)
Political factors			
House Rep. in CJS	−0.094	−0.425	**0.788*** **
	(0.410)	(0.565)	(0.238)
Ranking House Rep. in CJS	0.956	−11.365	
	(1.258)	(436.721)	
Senator in CJS	−0.019	−0.265	**0.226*** **
	(0.125)	(0.179)	(0.064)
Ranking Senator in CJS	0.039	0.029	0.514
	(0.526)	(0.901)	(0.392)
Gov. Pres. party align	−0.035	−0.039	−0.037
	(0.107)	(0.141)	(0.048)
Need-based factors			
Population density	0.00000	−0.00004	−0.00001
	(0.00001)	(0.00004)	(0.00002)
% High-speed internet house.	0.012**	**0.036*** **	0.015**
	(0.005)	(0.012)	(0.007)
% Highschool grad.	−0.007	0.013	**0.031*** **
	(0.024)	(0.033)	(0.012)
% Foreign born	−0.047**	0.021	−0.004
	(0.022)	(0.032)	(0.013)
% Non-English households	0.011	−0.019	0.004
	(0.014)	(0.021)	(0.008)

% Veteran	−0.009	0.096**	−0.033**
	(0.031)	(0.041)	(0.016)
% Home renters	0.013	−0.013	**-0.034*** **
	(0.013)	(0.020)	(0.008)
100% Poverty population	−0.094	−0.036	**-0.246*** **
	(0.097)	(0.141)	(0.060)
125% Poverty population	0.076	0.110	**0.267*** **
	(0.084)	(0.123)	(0.052)
% Children	0.041	−0.058	0.013
	(0.033)	(0.042)	(0.015)
% Seniors	0.024	−0.053	−0.027*
	(0.024)	(0.032)	(0.014)
% Rural	−0.012**	0.009	**-0.013*** **
	(0.005)	(0.007)	(0.002)
% Minority	−0.008	−0.016**	**0.008*** **
	(0.005)	(0.007)	(0.003)
Constant	−0.683	−20.955***	7.477***
	(2.962)	(4.149)	(1.544)
Observations	2,027	2,027	359
R^2	0.175		0.506
Adjusted R^2	0.166		0.477
Log Likelihood		−668.613	
Akaike Inf. Crit.		1,381.225	
Residual Std. Error	2.353 (df = 2005)		0.443 (df = 338)
F Statistic	20.251*** (df = 21; 2005)		17.327*** (df = 20; 338)
Note:			*p<0.1; **p<0.05; ***p<0.01

Key Finding 2: Political Factors were Significant Only in Explaining Amount ($) of Grants from LSC

The second major finding of this study was that political factors were most highly influential in explaining the amount ($) of grants recipient organizations received from LSC. Table 3, the results of the OLS and logistic regression models, show that having a member on CJS in the house and senate were both highly significant in the OLS model of amount ($) of aid received from LSC. These findings are particularly interesting, considering in the models for amount ($) of grants from all donors and receipt of grants from LSC (dummy), these political variables often had negative coefficients, though never significant. Table 6,

Table 4: Results of Total Amount ($) of Grants from all Donors Penalized Regression Model ($\alpha = 0$)

variable	coefficient
(Intercept)	4.663
Organization revenue	0.395
Ranking House Rep. in CJS	0.309
% Children	0.011
% High-speed internet households	0.010
100% Poverty population	0.003
125% Poverty population	0.003
% Veteran	0.002
% Highschool grad.	0.001
% Home renters	0.001
Population density	-0.00000
% Minority	-0.001
% Seniors	-0.001
% Non-English households	-0.003
Gov. Pres. party align	-0.004
% Foreign born	-0.007
% Rural	-0.007
Competition (30 miles)	-0.032
House Rep. in CJS	-0.062
Senator in CJS	-0.066
Ranking Senator in CJS	-0.103
Competition (10 miles)	-0.146

Note: When interpreting penalized regression results, look to coefficient magnitude and sign. Penalized regression attempts to minimize or zero out uninfluential variables, so variables with greater magnitude coefficients are the most influential in the model in the direction of their sign.
Refer to tables A1-A3 for full penalized regression results for Total Amount Grants from all Donors.

Table 5: Results of Receipt of Grants from LSC (dummy) Penalized Regression Model ($\alpha = 0.2$)

variable	coefficient
Organization revenue	0.765
100% Poverty population	0.017
% Veteran	0.015
125% Poverty population	0.012
% High-speed internet households	0.011
% Highschool grad.	0.006
Population density	-0.00001
% Minority	-0.006
% Non-English households	-0.010
% Foreign born	-0.011
Senator in CJS	-0.196
Competition (10 miles)	-0.492
Competition (30 miles)	-0.674
(Intercept)	-13.361

Note: When interpreting penalized regression results, look to coefficient magnitude and sign. Penalized regression attempts to minimize or zero out uninfluential variables, so variables with greater magnitude coefficients are the most influential in the model in the direction of their sign.
Refer to tables A4-A6 for full penalized regression results for Receipt of Grants from LSC (dummy).

Table 6: Results of Total Amount ($) of Grants from LSC Penalized Regression Model ($\alpha = 0.4$)

variable	coefficient
(Intercept)	10.605
House Rep. in CJS	0.580
Ranking Senator in CJS	0.533
Senator in CJS	0.197
Competition (10 miles)	0.183
Organization revenue	0.176
125% Poverty population	0.036
% Children	0.031
% High-speed internet households	0.009
% Minority	0.007
% Non-English households	0.001
Population density	-0.00001
% Seniors	-0.003
% Rural	-0.012
% Veteran	-0.016
% Home renters	-0.025
Gov. Pres. party align	-0.035

Note: When interpreting penalized regression results, look to coefficient magnitude and sign. Penalized regression attempts to minimize or zero out uninfluential variables, so variables with greater magnitude coefficents are the most influential in the model in the direction of their sign.
Refer to tables A7-9 for full penalized regression results for Total Amount ($) Grants from LSC.

the penalized regression model for amount ($) of aid received from LSC, also supports this major finding. In the penalized regression analysis, having a member on CJS in the house and senate as well as having the ranking CJS senate member were all more influential than organizational capacity factors. Though, Governor-President party alignment did not show evidence for significance in any of the models. Overall, these results do not support Hypothesis 4, showing that political variables do, in fact, have an influence in the models. This result is particularly surprising, considering the lack of significant correlation between any political variables and amount ($) of grants from LSC in the correlation analysis.

Key Finding 3: Community need-based factors showed inconsistent patterns of significance across all models

The final key finding of this study was that community-need based factors showed inconsistent patterns of influence across all models. Most apparently this was observed in inconsistent patterns of significance and unintuitive coefficients. Table 3, showing the results of the OLS and logistic regression analysis, shows this inconsistency in the contradictory patterns of the poverty population variables. Across all three models, 100% poverty population maintains a negative coefficient, while 125% poverty population as a positive coefficient, with both being significant in the final model (amount ($) of grants from LSC). It is unclear why organizations serving populations in greater poverty would be less likely to receive greater amounts ($) of aid from LSC.

Over all the need-based variables, there was inconsistent evidence supporting importance of environmental capacity. According to environmental capacity theory, recipient organizations in resource-rich areas should be more likely to receive local private donations, while organizations in resource-poor areas should be more likely to receive grants from LSC, a public funder. In Table 3, the results of the OLS and logistic regression models, % High speed internet households have a consistent positive relationship with all three outcomes of interest. This does not support the theory of environmental capacity, instead suggesting that resource-rich environments are influential in allocation of civil legal aid from all funders. Figures 4 and 5 show the GWR analysis for the coefficients for % High-speed internet households to dive deeper into these inconsistencies. The GWR analysis does shed light on these contradictory relationships, showing that the effect of % Households with high speed internet is not straightforward across space. Indeed, an area like Southern California, which has a negative coefficient in Figure 4, amount ($) of grants from all donors, and a positive coefficient in Figure 5, receipt of grants from LSC, supports the theory of environmental capacity. Though, the same does not hold true all areas, such as the DC Metro Area.

Overall, it is unclear why certain indicators of civil legal aid need would have significant positive relationships with amount ($) of grants, while others would have negative relationships. Ultimately, there is inconsistent support for Hypothesis 3. While 125% poverty population was an influential factor in determining amount ($) of grants from LSC, related need-based factors were not similarly influential towards this outcome.

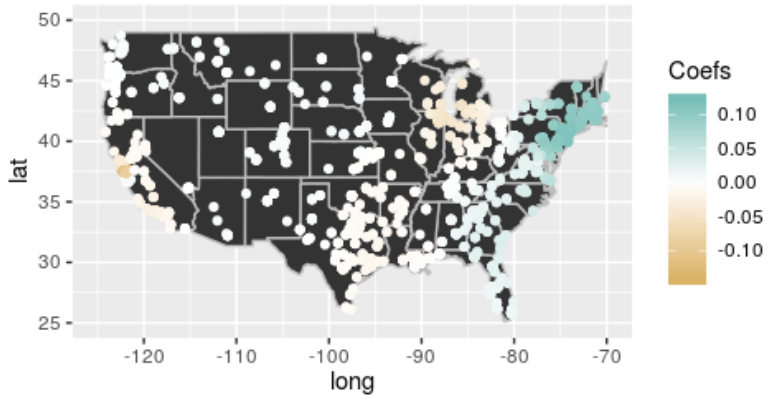

Figure 4: Results of GWR Analysis of Amount ($) of Grants from all Donors, coefficients for % High speed internet households.

Note: When interpreting GWR results, it is important to look to the sign of the coefficient. By looking at the sign, we can see patterns of opposite relationships between the explanatory variable (% Households with high-speed internet) and the outcome of interest (Amount ($) of Grants from all Donors) across space. Refer to Table A10 for full GWR results from this model.

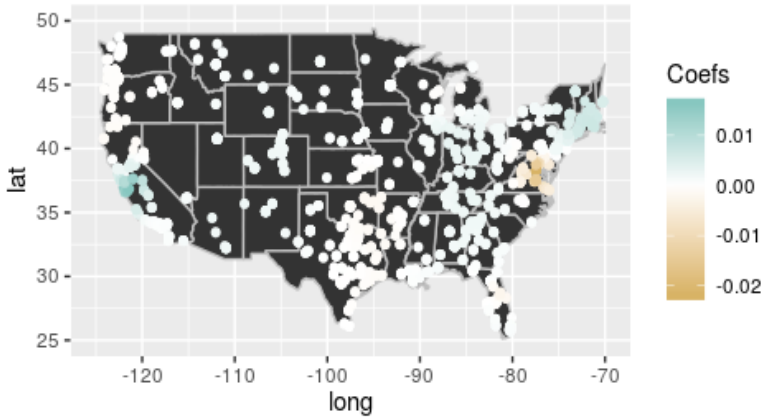

Figure 5: Results GWR Analysis for Receipt of Grants from LSC, Coefficients for % of Households with high-speed internet

Note: When interpreting GWR results, it is important to look to the sign of the coefficient. By looking at the sign, we can see patterns of opposite relationships between the explanatory variable (% Households with high-speed internet) and the outcome of interest (Receipt of Grants from LSC) across space. Refer to Table A11 for full GWR results from this model.

Discusson

Throughout all the models, the strongest support was provided for the theory of the importance of organizational capacity, with organization revenue consistently being influential and significant, as well as competition. The importance of organizational capacity

supports previous scholarship on the behavior of grantmakers. Private grantmakers, in particular, are shown to be less willing to take risks on recipients, relying on a revenue to demonstrate a safe investment. Looking at receipt of aid from LSC, the significance of organizational capacity suggests that LSC's reputation as having a notoriously strenuous grant application and reporting requirements holds up, weeding out organizations with fewer resources from applying.

Environmental capacity theory, though, consistently yielded conflicting results, at times supporting the hypothesis of a poor-resource environment influencing greater public aid and at times indicating that public aid did match resource demand. The great variation in the influence of environmental capacity and need-based factors was demonstrated in the GWR analyses, where spatial context impacted the direction of the effects of the variables.

Findings from this study also suggest there may be political bias in determining amount of aid received by LSC recipient organizations. Congressional political factors were most influential in determining the amount ($) of grants received from LSC, suggesting that members of congress may be using their positions of power on appropriating committees to advocate for greater funds for civil legal aid to legal aid organizations in their constituent districts. This finding is interesting because congress is one step removed from the grant allocation process, so they have no direct control over the amount of funding recipient organizations receive. Further, LSC claims the only factor taken into account is 125% poverty population, while these results suggest otherwise.

While population 125% of the poverty line was influential in the amount ($) of grants received from LSC, other indicators of civil legal aid were not similarly significant. Most interestingly, population 100% of the poverty line had a contradictory relationship, suggesting that civil legal aid organizations serving populations in greater poverty are less likely to receive greater amounts of aid from LSC. This relationship could be important in explaining the contradictions between environmental capacity and need-based grantmaking observed in this analysis.

As demonstrated by this analysis, public aid, while better matching resources to demand than private aid, has an extremely narrow operational definition of civil legal aid need. Indeed, LSC, though acknowledging other contributors to civil legal aid need in research of the Justice Gap, includes only population below 125 percent of the poverty line in their grant formula calculation. This indicates perhaps a larger issue within the legal aid community as a whole: a lack of understanding or recognition of the breadth of factors that contribute to civil legal aid need. Worldwide, there has been a push to research and define the exact frameworks and methods by which civil legal aid need, and access to justice, is operationalized. This push is largely due to Sustainable Development Goal 16: Peace Justice and Strong Institutions, calling in part to "promote the rule of law at the national and international levels and ensure equal access to justice for all." [52] The results of this study support the importance of this type of work, showing how communities in need of civil legal aid are being overlooked, limiting progress towards equal access to justice for all. LSC seems to be making an effort to allocate aid to the communities that need it the most, though is perhaps missing vulnerable populations and poor resource environments due to their restrictive formulaic allocation of aid.

Using an innovative dataset and multiple statistical methods in this analysis allowed

[52] White House Legal Aid Interagency Roundtable. "Efforts to Identify National Indicators on Access to Justice." January 2017. https://www.justice.gov/atj/file/926686/download

for a nuanced insights into the allocation of civil legal aid. The data available allowed for granular analysis of the issue, focusing on the organizational-level factors. Using penalized regression techniques not only added to the robustness of the conclusions from OLS but provided insight into the underlying structures of the data. GWR analysis was helpful in understanding spatial patterns of relationships with the outcome of interest, showing that different theories were supported in different spatial contexts. These methods complemented each other to provide an analysis with not only robust results but analytical subtleties.

Conclusion

Overall, not only does this study contribute substantive findings to the literature, including the importance of organizational factors in the study of distributive politics, but it provides methodological innovation and paths for future research. The importance of organizational capacity in receipt of both private and public aid was underscored by this analysis. While population below 125 percent of the poverty line was an influential factor in the receipt of public aid, comparison with the expectations of theories of environmental capacity revealed the drawback of a narrow operational definition of civil legal need. This study provides a basis for further investigation into the political biases of public civil legal aid, which were supported most overtly in the analysis of the amount ($) of public aid received. More research into civil legal aid is necessary to better understand how the overall network of grantmakers and recipient organizations should work to uphold the Constitutional principle of equal access to justice for all.

Most of the limitations of this study arose from the dataset used. Because the data was webscraped from administrative data, it could be subject to faults not shared by data specifically made for scholarly analysis. Organizations that did not have matches EIN matches were unable to be geocoded and therefore dropped from the analysis, which biases the data towards organizations that are large enough to file taxes. Additionally, the addresses used to geocode the observations may not necessarily represent the location of the organization themselves, but rather the individual filing their taxes. Some of the data used, particularly the demographic data, was not only out of date but did not vary with the year of the grant. Finally, it is unclear whether all the organizations receiving civil legal aid grants in this network are civil legal organizations necessarily, or if they have multiple functions.

There are several avenues for future research with this data. It would be interesting to investigate if the influence of the explanatory factors varies across civil legal aid subject areas. Because civil legal subject areas are quite varied, it would be informative to see if explanatory factors differ at all between them. It would also be interesting to perform network-based analysis with the data. This could further nuance the idea of organizational capacity, folding in ties to the overall grant network and previous receipt of grants.

Replication Code and Data

The project repository is posted on Github, user @jo-schroeder.

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Appendix

Table A1: Results of Mean Squared Error Test for Amount Grants from all Donors Penalized Regression Models

X	MSE
α=0 (Ridge)	5.708
α=0.1	5.787
α=0.1	5.689
α=0.3	5.719
α=0.4	5.753
α=0.5	5.718
α=0.6	5.721
α=0.7	5.767
α=0.8	5.737
α=0.9	5.772
α=1 (LASSO)	5.791

Table A2: Results of Amount Grants from all Donors LASSO Regression Model ($\alpha = 0$)

X	name	coefficient
1	(Intercept)	3.946
2	Organization revenue	0.530

Table A3: Results of Amount Grants from all Donors Elastic Net Regression Model (α = 0.9)

X	name	coefficient
1	(Intercept)	3.764
2	Organization revenue	0.543

Table A4: Results of Mean Squared Error Test for LSC (dummy) Penalized Regression Models

X	MSE
α =0 (Ridge)	0.116
α =0.1	0.118
α =0.2	0.116
α =0.3	0.116
α =0.4	0.115
α =0.5	0.115
α =0.6	0.117
α =0.7	0.118
α =0.8	0.115
α =0.9	0.116
α =1 (LASSO)	0.119

Table A5: Results of LSC (dummy) LASSO Regression Model ($\alpha = 0.0$)

X	name	coefficient
1	(Intercept)	-13.013
2	Organization revenue	0.879
3	Senator in CJS	-0.044
4	% Foreign born	-0.016
5	% Non-English households	-0.011
6	Competition (10 miles)	-0.136
7	Competition (30 miles)	-0.903

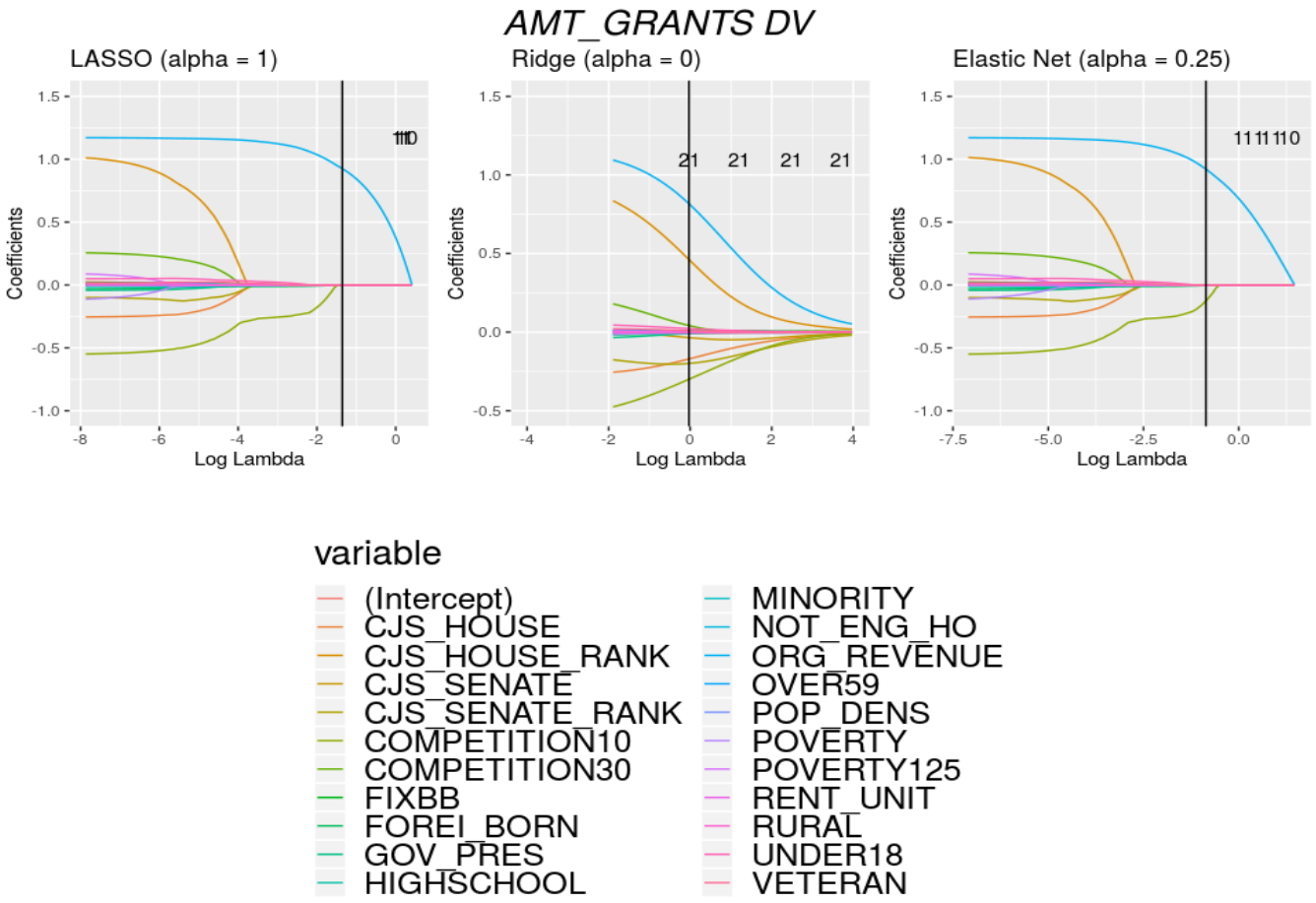

Figure A1: Summary of Amount Grants from All Donors Penalized Regression Results

Table A6: lResults of LSC (dummy) Ridge Regression Model ($\alpha = 1$)

X	name	coefficient
1	(Intercept)	-12.805
2	Organization revenue	0.659
3	House Rep. in CJS	-0.158
4	Ranking House Rep. in CJS	-0.715
5	Senator in CJS	-0.229
6	Ranking Senator in CJS	-0.213
7	Gov. Pres. party align	0.006
8	Population density	-0.00001
9	% High-speed internet households	0.014
10	% Highschool grad.	0.015
11	% Foreign born	-0.011
12	% Non-English households	-0.009
13	% Veteran	0.027
14	% Home renters	0.0003
15	100% Poverty population	0.021
16	125% Poverty population	0.018
17	% Children	-0.016
18	% Seniors	-0.009
19	Competition (10 miles)	-0.541
20	Competition (30 miles)	-0.596
21	% Rural	-0.0002
22	% Minority	-0.007

Table A7: Results of Mean Squared Error Test for Amount of LSC Grants Penalized Regression Models

X	MSE
α=0 (Ridge)	0.220
α=0.1	0.206
α=0.2	0.197
α=0.3	0.208
α=0.4	0.202
α=0.5	0.198
α=0.6	0.199
α=0.7	0.206
α=0.8	0.207
α=0.9	0.197
α=1 (LASSO)	0.203

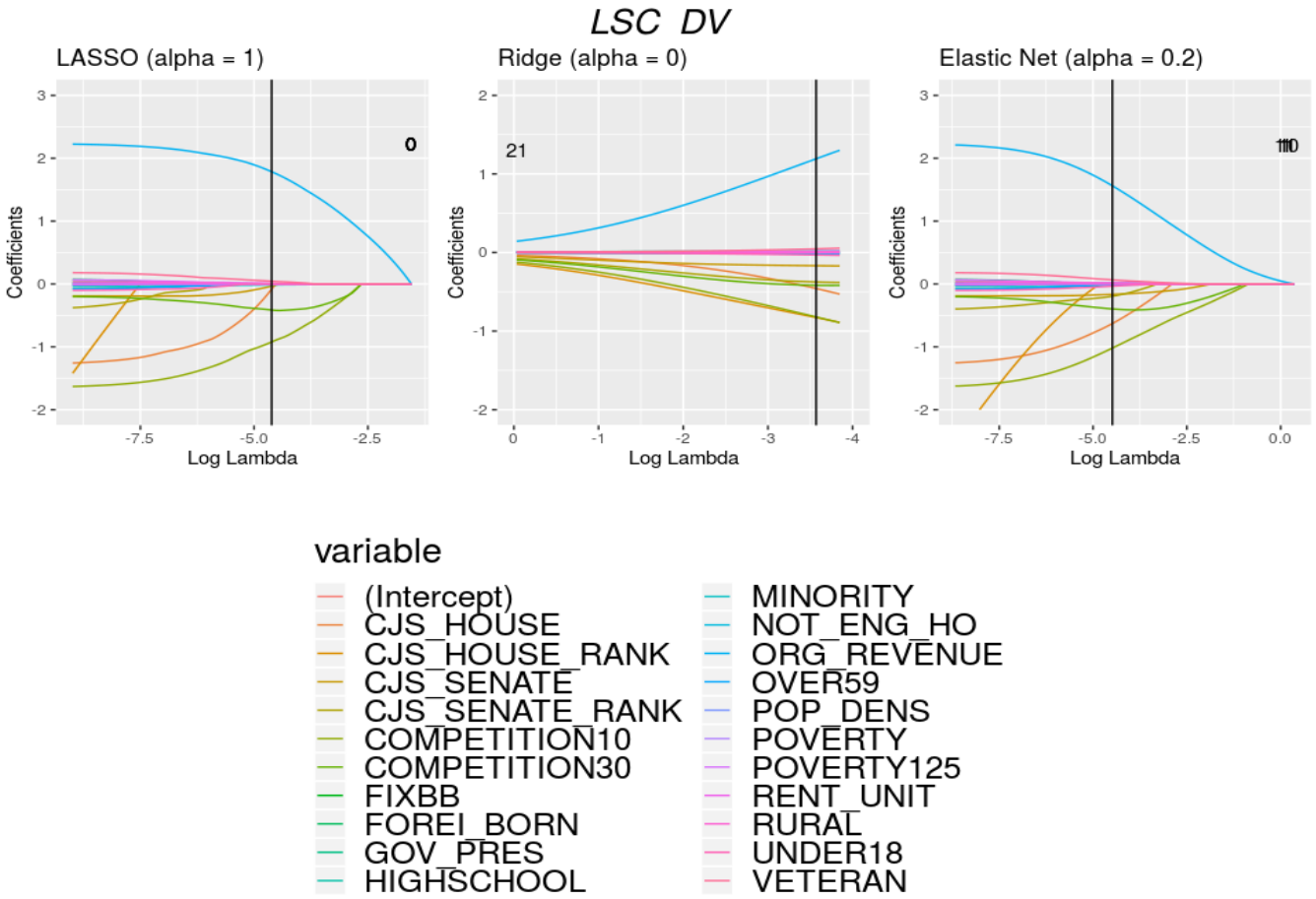

Figure A2: Summary of Receipt of Aid from LSC (dummy) Penalized Regression Results.

Table A8: Results of Amount of LSC Grants LASSO Regression Model ($\alpha = 0$)

X	name	coefficient
1	(Intercept)	10.759
2	Organization revenue	0.170
3	House Rep. in CJS	0.550
4	Senator in CJS	0.193
5	Ranking Senator in CJS	0.483
6	Gov. Pres. party align	-0.024
7	Population density	-0.00000
8	% High-speed internet households	0.007
9	% Non-English households	0.0004
10	% Veteran	-0.016
11	% Home renters	-0.023
12	125% Poverty population	0.034
13	% Children	0.034
14	Competition (10 miles)	0.142
15	% Rural	-0.012
16	% Minority	0.007

Table A9: Results of Amount of LSC Grants Ridge Regression Model ($\alpha = 1$)

X	name	coefficient
1	(Intercept)	11.430
2	Organization revenue	0.140
3	House Rep. in CJS	0.534
4	Senator in CJS	0.146
5	Ranking Senator in CJS	0.579
6	Gov. Pres. party align	-0.042
7	Population density	-0.00002
8	% High-speed internet households	0.010
9	% Highschool grad.	-0.007
10	% Foreign born	0.001
11	% Non-English households	0.002
12	% Veteran	-0.014
13	% Home renters	-0.011
14	100% Poverty population	0.009
15	125% Poverty population	0.012
16	% Children	0.032
17	% Seniors	-0.003
18	Competition (10 miles)	0.190
19	Competition (30 miles)	0.025
20	% Rural	-0.008
21	% Minority	0.004

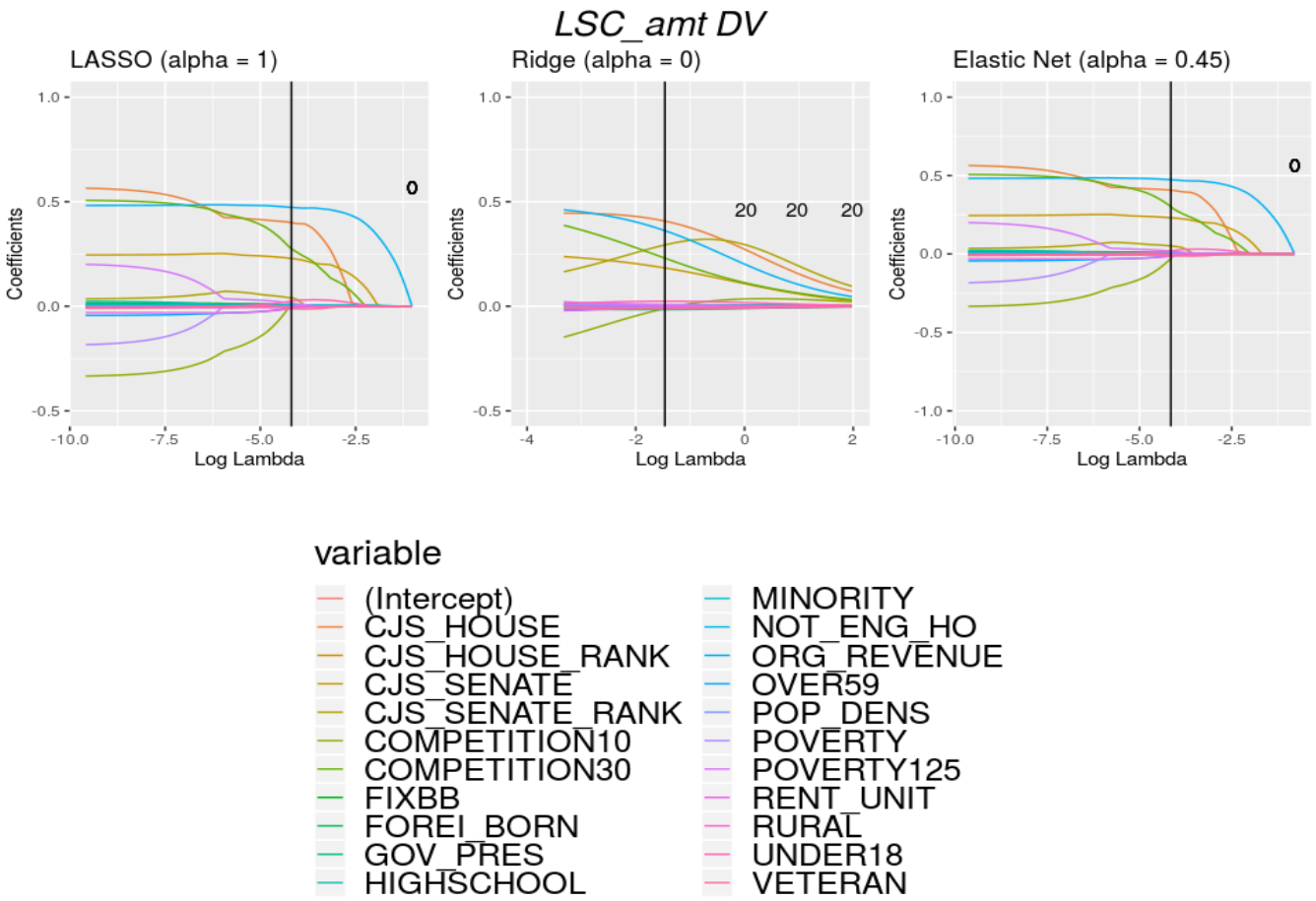

Figure A3: Summary of Amount Grants from LSC Penalized Regression Results.

Table A10: Summary of Results of GWR Analysis of Amount of Grants from All Donors

	Min	1st Qu.	Median	3rd Qu.	Max.	Global
X.Intercept.	-7.2608e+01	-1.2682e+01	2.7905e+00	9.2805e+00	4.4659e+01	-6.4928
ORG_REVENUE	7.6082e-01	9.6216e-01	1.0870e+00	1.1801e+00	1.3139e+00	1.1726
CJS_HOUSE	-4.9230e+00	-3.3935e+00	-2.9056e-01	6.4520e-01	1.8455e+00	-0.2554
CJS_HOUSE_RANK	-1.8055e+00	1.9245e-01	8.6012e-01	4.1836e+00	7.7075e+00	1.0383
CJS_SENATE	-1.6434e+00	-3.8785e-01	-1.0975e-01	1.6410e-01	5.0687e-01	0.0252
CJS_SENATE_RANK	-1.2847e+147	2.1351e-01	5.3225e-01	7.6571e-01	6.6934e+147	-0.0951
GOV_PRES	-4.3795e-01	-1.6032e-01	-3.9660e-02	5.3142e-02	2.3648e-01	-0.0426
POP_DENS	-7.7103e-04	-4.9673e-05	-1.1370e-05	1.8636e-05	2.7424e-04	0.0000
FIXBB	-1.4339e-01	-8.9000e-03	3.9827e-03	2.6583e-02	1.2352e-01	0.0071
HIGHSCHOOL	-3.5720e-01	-1.1596e-01	-5.5764e-02	4.3330e-02	9.2113e-01	-0.0036
FOREI_BORN	-1.8332e+00	-1.0495e-01	3.1286e-03	7.0005e-02	4.7145e-01	-0.0330
NOT_ENG_HO	-2.5428e-01	-4.5733e-02	1.8299e-02	7.7502e-02	1.5141e+00	0.0081
VETERAN	-1.9191e-01	-6.5118e-02	1.0483e-02	6.0020e-02	5.2515e-01	0.0114
RENT_UNIT	-3.5851e-01	-3.1243e-02	1.2169e-02	3.7837e-02	1.0034e-01	0.0114
POVERTY	-1.7502e+00	-2.5762e-01	-1.4605e-01	5.0880e-02	6.4105e-01	-0.1396
POVERTY125	-4.8503e-01	-9.7659e-02	1.0211e-01	2.3857e-01	9.8548e-01	0.1103
UNDER18	-5.1864e-01	-1.9178e-01	-4.6754e-04	1.3122e-01	3.7934e-01	0.0486
OVER59	-2.0608e-01	-3.5964e-02	1.4043e-02	9.0288e-02	4.3758e-01	0.0142
COMPETITION10	-1.4991e+00	-8.9979e-01	-5.1086e-01	1.5602e-01	1.9327e+00	-0.5534
COMPETITION30	-8.5122e-01	5.5830e-02	4.5302e-01	7.3862e-01	1.4579e+00	0.2605
RURAL	-1.4822e-01	-2.8978e-02	-1.7893e-02	-5.8066e-03	4.3734e-02	-0.0030
MINORITY	-1.1175e-01	-3.2323e-02	-1.7174e-02	4.3311e-03	8.5033e-02	-0.0108

Table A11: Summary of Results of GWR Analysis of Receipt of Aid from LSC

	Min.	1st Qu.	Median	3rd Qu.	Max.	Global
X.Intercept.	-1.3558e+01	-3.0027e+00	-1.4665e+00	-3.9111e-01	3.8894e+00	-2.3839
ORG_REVENUE	-2.0392e-03	1.2251e-01	1.6611e-01	1.8995e-01	2.2833e-01	0.1801
CJS_HOUSE	-7.9077e-01	-1.3392e-01	-5.5744e-02	5.9068e-02	2.7374e-01	-0.0647
CJS_HOUSE_RANK	-8.1107e-01	-2.9598e-02	3.2655e-02	1.2723e-01	4.5835e-01	-0.0584
CJS_SENATE	-6.4683e-01	-1.1068e-01	-1.5569e-02	1.4226e-02	1.4959e-01	-0.0233
CJS_SENATE_RANK	6.7018e+123	-6.8274e-02	-5.3601e-03	5.5393e-02	9.9195e+115	-0.0292
GOV_PRES	-3.7185e-02	-2.2612e-02	-1.4358e-02	-4.5244e-03	2.8240e-02	-0.0031
POP_DENS	-4.1399e-05	-7.9604e-06	-3.0637e-06	5.4193e-07	5.4812e-05	0.0000
FIXBB	-2.1871e-02	-1.1457e-04	1.0205e-03	2.3083e-03	1.6390e-02	0.0019
HIGHSCHOOL	-3.4809e-02	-1.1005e-02	2.2946e-04	8.2663e-03	1.0070e-01	0.0002
FOREI_BORN	-1.5578e-01	-9.3879e-03	-2.3640e-03	8.7808e-03	7.4469e-02	0.0046
NOT_ENG_HO	-3.7492e-02	-4.7651e-03	-1.8196e-03	8.2921e-03	1.9354e-01	-0.0035
VETERAN	-1.0948e-01	-5.5114e-04	1.2500e-02	3.0073e-02	2.8454e-01	0.0095
RENT_UNIT	-4.7830e-02	-9.9903e-03	-5.0924e-03	-4.2324e-04	8.2846e-03	-0.0004
POVERTY	-1.3623e-01	-5.5225e-02	-3.2157e-02	-3.5101e-03	1.9416e-01	-0.0060
POVERTY125	-1.7424e-01	7.6248e-03	3.3762e-02	5.6661e-02	1.1575e-01	0.0103
UNDER18	-6.0291e-02	-3.5446e-02	-1.0389e-02	9.2828e-03	2.4012e-02	-0.0044
OVER59	-4.1450e-02	-9.9842e-03	-1.4351e-03	5.2675e-03	8.3995e-02	-0.0033
COMPETITION10	-3.0345e-01	-1.9669e-01	-1.1627e-01	2.2330e-02	3.1434e-01	-0.1133
COMPETITION30	-1.9470e-01	-1.1846e-01	-5.3812e-02	-1.7484e-02	5.1909e-01	-0.0661
RURAL	-1.4049e-02	-1.9218e-03	-2.8805e-04	1.7253e-03	9.8545e-03	0.0019
MINORITY	-2.5275e-02	-4.1248e-03	-2.3705e-03	-4.8562e-04	1.5974e-02	-0.0022