Measuring Voter Equity at the Local Level

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Abstract: A basic premise of a democracy is that all citizens have an equal opportunity to participate in governance via the ballot. Decades of research have shown that electoral access is inequitable even if it is equal—most have the right to vote, but some have greater barriers than others. One of the challenges in assessing the degree of electoral equity in the United States is that the country does not have a single electoral system; instead, it has multiple systems at the state and local levels. The local level of election administration is a critical and understudied aspect of the US electoral system with important implications for voter access. Voting access varies widely within states depending on the access provided by local governments. We pilot an intensive data collection project at the local (county) level for two states: Arizona and Nevada. We find that rural counties in both states have much lower access. We then develop one encompassing voting access score at the local level, the "MOVE" score, and subcomponent scores usable by scholars and policy practitioners interested in voting access and equity.

Introduction

Governmental legitimacy is the degree to which all citizens have equal opportunity to meaningfully impact political decisions (Verba 2003).[1] One of the challenges in assessing the degree of political equality in the United States is that the country does not have a single electoral system; instead, it has multiple systems, which can create confusion for voters, particularly for those who move from one state to another (Burden and Vidal 2016). The Constitution designates "The times, places and manner of holding elections…shall be prescribed in each state by the legislature thereof,"[2] which means that each state has a great deal of latitude in designing laws and procedures, so long as those do not violate federal laws[3] and other constitutional provisions. This has resulted in extraordinary variance and complexity as each state, going back to the Founding Era, has been free to develop its distinct systems and cultural norms around elections, resulting in enormous variation across states (Cain, Donovan, and Tolbert 2008). Each state's election laws, procedures, and practices constitute distinct "ecosystems" that have evolved over centuries and result in differing degrees of electoral access, and varying costs of voting, across the states (Alvarez, Atkinson, and Hall 2013; Stewart 2020).

Differences in voter access do not simply occur at the state level. There are also sub-state ecosystems because most responsibilities for registering voters and running elections are delegated to local election officials—typically county election officials—whose actions are affected by their specific contexts (Ewald 2009; Ritter and Tolbert 2024). Thus, the wide variance in electoral practices is the product of both differences in state laws and differences in

[1] This requires that not only can citizens equally participate in elections, but that they also are able to hold political office without having to overcome political and statutory barriers.
[2] United States Constitution, Article I, Section IV.
[3] Among the most important federal laws are the 1965 Voting Rights Act, the 1993 National Voter Registration Act, the 2002 Help American Vote Act and the 2020 Uniformed and Overseas Citizens Absentee Voting Act.

the local administration of elections, which reflects local norms and the funding base available for carrying out election-related tasks (Kropf et al. nd; CRS 2019). Existing cross-state measures of voter access capture variation at the state level (Pomante, Schraufnagel, and Li 2023; Li, Pomante, and Schraufnagel 2018; MIT Election Data and Science Lab 2016*)*, without exploring variation at the local level of election administration. Our focus in this article is on elaborating the key tasks of local election administration, collecting an extensive pilot dataset on the local costs of voting, and quantifying voter equity at the local level. Our measure complements the recently published County Election Administration Index (CEA), which focuses on access, accuracy, and integrity of local election administration (Ritter and Tolbert 2024).

We develop a measure of voter equity based on the county ecosystem—the set of policies and accessibility at the county level that affect voter access. We begin by laying out the important role local officials play in administering elections, and how that authority varies across states. The county is an extremely important unit of analysis for voter access because nearly all voter interaction in the process, from registration to casting a ballot, takes place at the county level in most states. We then detail our pilot data collection project on aspects of voter access for every county in two states, Arizona and Nevada. We collect a broad range of variables and then develop a comprehensive Measure of Voter Equity (MOVE) score at the county level for Arizona and Nevada, which we evaluate based on demographic information and local knowledge. This comprehensive indicator contributes to our understanding of voter access at the local level in the United States. When extended beyond the two states in this pilot study, it will allow us to make systematic comparisons of local electoral access across the country.

Our manuscript is organized as follows. We first lay out the theory linking the "costs" of voting to voter equity, highlighting the role of local elections on voting access. In short, voters

have very different resources to devote to the task of voting, and barriers to voting disproportionately affect certain groups, especially those with low socioeconomic status (SES) and racial and ethnic minorities. Second, we detail our data collection efforts to quantify barriers to voting at the local level. Third, we present the results of our pilot study of all counties in Arizona and Nevada. We show correlations between our MOVE indicator and relevant SES factors at the county level for those two states and compare our indicators to the CEA. We include a detailed description of the actions taken by local officials in Elko County, Nevada, during the 2022 election to illustrate the control that local election officials have over the actual administration of elections and to highlight the differences between our index and existing measures. Finally, we discuss the next steps in our data collection effort and our long-term goal to integrate state and local ecosystems into nationwide voter equity scores.

Models of Voting: Varying Costs Across Voters

There is a large body of political science research on the factors that influence voter turnout and vote choice. Most involve refinements of the basic model developed more than sixty years ago by Anthony Downs. This model is expressed as the equation ($R = PB - C$), where the reward (R) that one gets from voting is a function of the perceived net benefit (PB) from the two parties minus the cost of voting (C) (Downs 1957). Much of the early research assumed that the cost of voting was minimal, so it focused on the differences in perceived benefits provided by the two parties (Riker and Ordeshook 1970). For example, Niemi described the act of voting as "relatively costless" because it takes very little time and minimal gasoline to travel to polling places, which are located close to home (Niemi 1976). However, Sanders showed in an

influential 1980 study using survey data that cost factors had been unduly discounted and that voters differ in their abilities to bear those costs (Sanders 1980).

This recognition that voters differ in the resources needed to bear the costs of participation led to the development of the resource-based theory of political participation. Rosenstone and Hansen succinctly captured this view, writing, "Participation in politics, that is, has a price, a price that is some combination of money, time, skill, knowledge, and self-confidence," and then went on to note that wealthy and educated individuals with a sense of political efficacy are better able to bear the cost of participation (Rosenstone and Hansen 1993; Brady, Verba, and Schlozman 1995). As a task force of the American Political Science Association noted, those resources are not equally distributed across populations but instead are more prevalent among the white electorate (Williams 2004).

While being "resource-rich" and "resource-poor" affects electoral participation, the decision to participate or not occurs within specific electoral ecosystems. The electoral laws, procedures, practices, and resources within the electoral "ecosystem" can either increase or decrease the costs that different groups of potential voters must bear, and racial minorities are much more likely to face greater challenges in meeting those costs.[4] Moreover, to varying degrees, those effects are the product of historical discrimination against these communities. Voting rights litigation can be used to eliminate formal structural barriers, but it cannot erase the social, cultural, and political legacy of disempowerment. There is a general recognition that many of the variables that affect voting, such as education, health, employment, and income, are affected by race and historical discrimination. But there are less recognizable effects, such as

[4] There is academic research showing, as far back as 2008, that election officials, faced with financial challenges, disproportionately cut back the access to voting sites in minority communities as opposed to white communities (Fullmer 2015; Weaver 2015). But even laws that appear racially neutral can have discriminatory impacts, as has been shown with respect to voter ID laws (Barreto et al. 2018).

political trust, which also vary by race. Political trust (e.g., trust in political leaders, political regimes, and government institutions) is substantially lower among racial/ethnic minorities than among whites (Aberbach and Walker 1970; Avery 2009; Koch 2018; Schroedel et al. 2020).

Model of Voting Access

Much of the cost of voting is determined by the state electoral ecosystem, which includes the laws that govern registration, election timing (including when mail-in ballots are due), and the state's political climate for racial/ethnic minorities. Yet there is still substantial local discretion over the administration of elections, shaped by the local (especially county) electoral ecosystem. For example, the degree of electoral access in a state often is sharply different in rural versus urban areas—whether due to the challenges of trying to provide access to voters, spread over vast terrain, or due to partisan and ideological differences. Finally, in keeping with the resource-based theory of political participation, there should also be measures of the differences in access to those resources among sub-populations within a political jurisdiction.

State Electoral Ecosystem

There is a large body of research on cross-state differences in election laws and procedures. Although early voting models conceptualized voting as a single act, more recent scholarship has broken voting down into a series of sequential steps, each of which has costs and potential for the process to be derailed and would need to be specified in the model (Timpone 1998; Stewart 2010). Over the past decade, the differences at each stage have become greater with some states enacting laws aimed at increasing access by making the process easier while other states pass laws that increase the cost of voting (Brennan Center 2021).

At the state level, there are two highly influential measures of state election access and quality. The Cost of Voting Index (COVI), which ranks the 50 states in nine areas: pre-registration laws, registration restrictions, registration deadlines, restrictions on registration drives, automatic voter registration, voting inconvenience, voter identification laws, polling hours and early voting, have been used to assess the ease of voting for more than a quarter of a century (Li, Pomante, and Schraufnagel 2018; Schraufnagel, Pomante, and Li 2022; Pomante, Schraufnagel, and Li 2023). This indicator is closest to our conceptualization of voting access but focuses on the state level of administration rather than the local level.

Starting with the 2008-2010 election cycles, researchers at the Massachusetts Institute of Technology Election Science Data Lab have conducted post-election evaluations of how well states have administered elections. The resulting Elections Performance Index (EPI), funded by the Pew Charitable Trust, provides scores that can be used to make cross-state comparisons in the administration of elections. The indicators in the EPI focus on the technical and legal aspects of election administration. The initial impetus for the development of the EPI was a book by Gerken (2009), which called for the creation of a Democracy Index that would evaluate the performance of electoral systems at both the state and local levels.

The Elections Performance Index uses the following 17 indicators to identify and track administrative problem areas in the different states and then ranks states based on their cumulative performance: absentee ballot rejection rates, unreturned absentee ballots, data comprehensiveness, disability-related voting problems, military and overseas ballot rejection rates, military and overseas ballots unreturned, availability of online registration, post-election audit required, rates of provisional ballots cast, provisional ballot rejection rates, registration or

absentee ballot problems, rates of registrations rejected, turnout, voter registration rates, availability of voter information, voting technology accuracy, and voting wait time. [5]

The County Electoral Administration Index (CEA) incorporates the EPI's variables at the county level with a selection of additional variables and state-level factors. Like the EPI, they highlight three areas of administration: access, accuracy, and integrity, and collect indicators of the technical and legal aspects of election administration. Our MOVE index captures voters' perspectives on the cost and ease of voting at the county level. It more closely parallels the COVI index, with additional variables for services that are provided at the county level, not the state level, in most states. Like the EPI and the COVI, the CEA and MOVE indices are complementary indicators of the voting ecosystems of US counties and other local administrative units.

Local Electoral Ecosystem

The administration of elections in the United States is highly decentralized. Not only are there enormous differences across states, but significant variation also exists within states. In some cases, this is because state law creates different administrative structures depending upon the size and type of electoral jurisdiction. Much of the variation is simply the inevitable result of decisions made by the thousands of local officials tasked with administering elections. According to data provided by the National Conference of State Legislatures, there are more than

[5] See elections.mit.edu/#/data/map for an interactive map showing overall state performance and those for the different factors. The US Election Assistance Commission collects information from local authorities in its "Election Administration and Voting Survey (EAVS)." This survey provides information about the number of voters registered and disqualified, and the method by which they vote. It also includes information on voting equipment and vote tallying. It does not collect variables directly assessing voter equity.

10,000 election administrative jurisdictions in the United States.[6] While most elections are administered at the county level, some Midwestern and New England states delegate this responsibility to officials in cities or townships.[7] Local election officials (LEOs) have a great deal of administrative discretion over the running of elections. According to Cha and Kennedy (2014), they "determine who can vote, where they can vote, and how they can vote."

While there are strong professional norms, nearly 60% of states choose LEOs through partisan elections, which may affect their performance (Coleman and Kellough 1998; Moynihan and Silva 2008; Kimball and Kropf 2013; Kropf, Vercellotti, and Kimball 2013; Burden et al. 2013). Local election officials also differ from the public in that they are overwhelmingly white (94%) and much more likely to be female (81%) (Manion et al. 2022). There are at least eight general issue categories that are relevant in assessing how local election officials carry out their duties. The following five are under the control of the LEO: the provision of voter information, oversight of the registration process, the recruitment and training of poll workers, the designation of voting sites and drop box locations, and control of ballots. We focus on these five elements in our data collection effort. Three other elements: the level of funding for election-related work, the level of mail service in the community, and whether there is a history of voting abuses, may not be under the control of the current LEO.

Although there may be some funding from state legislatures, county governments must provide most of the funds for carrying out elections. A survey of LEO attitudes found that having

[6] The following sixteen states do not have uniform administrative structures for election jurisdictions: California, Georgia, Hawaii, Illinois, Kansas, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, Nevada, New Jersey, Oregon, Texas, Washington, Wisconsin (NCSL 2022).

[7] Connecticut, Maine, Massachusetts, New Hampshire, and Vermont have systems where election administration is handled at the city or township level. Hawaii, Illinois, Michigan, Minnesota, Mississippi, and Wisconsin have mixed systems, where most are administered at the county level, but some are handled by municipal officials (NCSL 2022). See Ritter and Tolbert (2024) for additional information about state-to-state variance in local election administration.

sufficient funding is a huge concern among officials, and many believe funding conditions have gotten worse (Montjoy 2008; Burden et al. 2012).[8] We include measures of local government funding capacity (e.g., a measure of the local property tax base) and the property tax rate in the state (Kropf 2016). Given the increased importance of voting by mail, we include measures of the availability of mail service (whether there is residential mail delivery and the location of post offices). Although the current local election official may not have been involved in past voting rights abuses, their existence will continue to shape the local electoral climate, so we include a measure of previous voting rights litigation.

Data Collection—Voter Access at the County Level

The critical role of local election officials in voter access has been deemphasized relative to differences across states (Ritter and Tolbert 2024). Part of the reason for this focus on states is the lack of data on local officials, which is complicated by the sheer number of LEOs (more than 6500) and significant cross-state differences in the degree of local control and the unit of local analysis. To help fill this gap in electoral research, we have collected a range of variables capturing different aspects of voter access at the county level.

We piloted our data collection in two states—Arizona and Nevada. Arizona and Nevada are interesting states with respect to several aspects at the heart of our study. Both states are very racially and ethnically diverse, including sizable populations of African American, Latino, Asian, and Native American voters. Both states also have significant urban and rural populations, with the associated difficulties in voting that arise in these different settings. In both states, elections are administered at the county level, which is by far the most common locus of

[8] A survey of local election officials, conducted in early 2024, found that 83% of respondents stated they would need greater funding in the next five years (Brennan Center for Justice 2024).

authority for elections across states. Also in both states, there are wildly different populations across counties, resulting in quite different operations, including staff numbers and levels of service needed and provided. This variation is also very common within states, particularly in the larger states in the West.

These states also differ substantially in terms of state-level costs of voting. The COVI score for Nevada was among the best in the country; it has the seventh lowest cost of voting. In contrast, Arizona was right in the middle with the 26th lowest cost of voting (Schraufnagel, Pomante, and Li 2022: 224). This would suggest that voters in Nevada would experience few barriers when it comes to voting, while those in Arizona would find it much more difficult. However, the COVI scores do not account for the importance of local election officials in administering elections. We illustrate this point by describing the enormous difficulties that Native Americans in Elko County, Nevada experienced in trying to get local officials to provide them with electoral access, as required by state law.

Collection and Coding Process

Our data collection process is labor intensive. We employ mostly undergraduate research assistants to find the data through several approaches, all of which require research assistants (RAs) to go county-by-county collecting the relevant information. This team of RAs includes students from Scripps College, Pomona College, Pitzer College, Claremont Graduate University, University of Pittsburgh, and Towson University. First, we ask the RAs to search the county voting website to find the required information. For example, if the research assistant sees on the local government website that voters can receive registration information at local DMV offices, then students will code that subcomponent variable of registration as 1. Not all information, or

even most information in some counties, is available via websites. It could be the case, for example, that registration information is available at DMV offices, but this is not listed on the county website. In these cases, the research assistant will call the relevant government office. The research assistant will start by calling the county registrar of voters' office directly to ask for information on all outstanding coding items. For example, the RA may have found through the county website that registration information is available at the DMV, but not whether registration information is available through local social services offices or through the media (for example, local radio). Ideally, the RA will receive answers on all outstanding items, but typically this is not the case. Research assistants typically make additional calls, such as to the government social services office, to ask whether voter registration information is available.

It is very important in the data collection process that we do not have missing information that would result in a lower score for the county than may be warranted. Accordingly, our research assistants are instructed to pursue all pieces of information in our coding scheme, for a total of over 50 pieces of information collected for each county. We also ask all RAs to meticulously document their data generation process, including whether the information came from an online source, with the relevant link, or from a phone call, in which the name, title, date, and time of the call are recorded. On average, each county takes 2-7 days to collect. The scope of our data collection at the county level is an important contribution of the project.

The depth and breadth of the information that we are asking our RAs to collect presents a challenging data collection task, to say the least. The primary challenges that RAs face can be boiled down to: *where* they can get that information and *if* the information is publicly available in that county. While this was part of the motivation for undertaking this project, the variation in what information is available, county to county, is shocking. The barriers to accessing

information by dedicated researchers suggest how challenging it is for (less dedicated) voters to obtain that information. Our RAs frequently had a difficult time collecting basic information from county websites, a place where one might expect most of the information our scores are composed of to be available. When RAs exhaust online resources to find information, they call local county offices. The phone calls are sometimes a struggle, given the current political climate in which elections are viewed with suspicion. Employees answering the phone are often concerned that RAs are looking to embarrass or discredit the local election official or local election office. It is not uncommon for the employee to fail/refuse to answer RA questions or to hang up. However, despite these obstacles, our RAs persist to the best of their ability until the information for each county is complete.

County Level Electoral Variables

We include the following variables in our analysis. As described above, each subcomponent is meticulously collected, with details documented, by our team of research assistants.

Registration Information (0-5): additive scale that measures whether the county provides registration information to the general public in the following locations: DMV offices, government social service offices, general media services, minority-oriented media services, provides information in minority languages.

Voting Information (0-5): additive scale that measures whether the county provides voting information to the general public in the following locations: DMV offices, government social service offices, general media services, minority-oriented media services, provides information in minority languages.

Registered Voter Information (0-4): additive scale that measures whether the county provides the following information to registered voters: information about polling locations and closures, information about drop box locations, changes, and times, information about early voting locations, changes, and times, information about voting center locations, changes and times.

Registration Drives (0,1): dichotomous measure of whether the county had a voter registration drive in the past four years. 0 is no registration drive and 1 is a registration drive.

Ease of Registration (0-6): additive scale that measures whether the county makes it easy to

register in the following ways: not requiring government-issued identification to register, allows registration at DMV offices, allows registration at government social service offices, assists people whose registration forms are incomplete or have errors, does not require registration forms to be notarized, provides registration assistance in minority languages.

Availability of Poll Workers (0-6): additive scale that measures the availability of poll workers in the following ways: no shortage of poll workers, have adequate funding to pay poll workers, provided poll worker training in the past four years, poll workers are representative of county population, poll workers are trained to assist those with limited English, has run a media campaign to recruit poll workers in the past four years.

Reduction in Election Day Polling Locations (0,1): dichotomous measure where 0 is no reduction and 1 is a reduction in past four years.

Drop Boxes (0,1): dichotomous variable where 0 means there are no drop boxes and 1 indicates the county has drop boxes for voting.

Vote Center (0,1): dichotomous variable where 0 indicates no vote centers and 1 indicates there is at least one vote center in the county.

Standard Mail Service (0,1): dichotomous variable measures whether the entire county has standard mail service (e.g., residential mail delivery). 1 means the entire county has standard mail service and 0 means at least part of the county has non-standard mail service (e.g., some residents do not have residential mail delivery).

Post Office Locations (0-5): Likert scale measure of access to post offices where 5 = all residents have access within 10 miles, 4 = some residents must travel up to 20 miles to reach a post office, 3 = some residents must travel up to 40 miles to reach a post office, 2 = some residents must travel up to 60 miles to reach a post office, 1 = some residents must travel up to 80 miles to reach a post office, 0 = some residents must travel more than 80 miles to reach a post office.

State Support for Elections (0-3): Likert scale measure of financial support provided by the state for running elections. 0 = no financial support, 1 = limited funding for some elections, 2 = state covers a portion of the costs for all elections, 3 = state provides full funding for all elections.

State Support for Equipment (0,1): dichotomous variable measuring whether state provides funding for election equipment. 0 = no funding, 1 = funding.

These variables are summary measures of subcomponents of our extensive data collection effort.

Table 1: Arizona Sub-Component Score

County	Registration Info	Vote Info	Registered Voter Info	Registration Drive	Ease of Registration	Poll Workers	Poll Locations	Drop Box Score	Vote Center Score	Standard Mail	Local Post Office	State Support	State Funding
Apache	3	3	3	1	4	4	0	1	0	0	4	0	0
Cochise	3	3	3	1	5	6	0	1	1	0	3	0	0
Coconino	4	4	4	1	5	5	1	1	1	0	2	2	0
Gila	5	5	4	1	5	6	1	1	1	0	2	0	0
Graham	3	3	3	1	5	4	1	1	1	0	3	0	0
Greenlee	4	4	4	0	5	6	0	1	1	1	3	2	1
La Paz	4	4	1	1	5	4	1	0	0	1	3	0	0
Maricopa	4	4	4	1	4	5	0	1	1	1	3	2	1
Mohave	3	3	3	1	4	6	1	0	0	0	1	0	0
Navajo	4	4	4	1	4	4	1	1	1	1	3	0	0
Pima	5	5	4	1	4	3	1	1	1	0	4	0	0
Pinal	5	5	4	1	5	5	0	1	1	1	5	1	1
Santa Cruz	5	5	4	1	5	5	0	1	1	1	5	1	0
Yavapai	5	5	4	1	5	5	0	1	1	0	4	1	0
Yuma	5	5	4	1	4	5	1	1	1	1	3	1	0

Table 2: Nevada Subcomponent Scores

County	Registration Info	Vote Info	Registered Voter Info	Registration Drive	Ease of Registration	Poll Workers	Poll Locations	Drop Box Score	Vote Center Score	Standard Mail	Local Post Office	State Support	State Funding
Carson City	5	5	4	1	5	6	1	1	1	1	5	1	1
Churchill	3	2	4	0	4	5	0	1	1	1	5	1	1
Clark	5	5	4	1	6	6	1	1	1	1	3	1	1
Douglas	4	4	4	1	6	5	0	1	1	1	5	1	1
Elko	3	2	4	0	6	5	0	1	1	0	5	1	1
Esmerelda	4	4	3	1	5	3	1	1	1	0	0	1	1
Eureka	2	2	2	0	4	3	1	1	1	0	2	1	1
Humboldt	4	3	0	0	5	5	0	1	1	0	3	1	1
Lander	3	3	4	0	4	5	0	1	1	1	4	1	0
Lincoln	3	3	3	0	4	3	0	0	0	1	5	1	1
Lyon	2	2	4	0	5	4	0	1	1	0	4	1	1
Mineral	3	2	4	1	5	5	0	1	1	0	5	1	1
Nye	3	3	4	0	4	6	0	1	1	1	5	1	1
Pershing	2	2	4	1	4	4	1	1	0	1	3	0	1
Storey	3	3	4	0	5	5	1	1	1	0	4	1	1
Washoe	5	5	4	1	6	6	1	1	1	0	4	1	1
White Pine	3	2	4	1	4	3	0	1	1	0	0	1	1

Arguably, the most surprising takeaway from Table 1 and Table 2 is the variance within these two states. It highlights the importance of examining the administration of elections at the local level and not simply focusing on cross-state comparisons of electoral access. On the measures dealing with providing the public with information about registration and voting, the counties in Arizona garnered scores ranging from 3-5, but in Nevada the county scores on those questions generally lower (2-5), with only the urban counties with scores of 5. The greatest in-state disparities in Arizona are on the questions dealing with state support for running elections, with some counties receiving substantial support and some counties reporting they receive no support or funding. In contrast, the levels of state support in Nevada were mostly similar. Each state had a county that scored very low on its efforts to keep registered voters informed. Nearly all the Arizona counties had registration drives within the past four years, but only about half of the Nevada counties did. In both states, roughly half of the counties had reduced the number of Election Day polling locations. Generally, the counties that included places with non-standard mail service also included areas where some people had to travel long distances to access post offices, suggesting that voting by mail would be difficult.

MOVE Index of Local Voting Access

We create a summary MOVE index to capture the cumulative degree of voter access. The aggregation of data into indices requires decisions, both theoretical and practical. We view access to voting to be akin to a cumulative set of barriers or supports, each of which makes voting harder or easier. We thus construct our voter access score as an additive index, implying

voting barriers accumulate in a linear way.[9] The EPI and CEA also construct their indices by adding subcomponents and weighting them equally.

We present the voter access index as raw scores (normalized between 0 and 1) and a relative rank of counties among their states, and across states (currently only two states). We create a cumulative index of all our variables. To construct the index, we first standardized the values of our indices so that all variables have equal weight in our measure. We then add them together and standardize them to a 0-1 value based on the minimum and maximum values for each state. The scores are calculated so that a higher value implies higher levels of voter access.

Table 3 includes county summary statistics by state. Arizona counties average slightly higher than Nevada counties, and the median county is significantly higher than the median Nevada county. This is surprising given that the ease of voting at the state level is considered much better in Nevada than Arizona according to the COVI, EPI, and CEA measures. These differences highlight the importance of collecting local election access data.

The variation across counties is much higher in Nevada than Arizona, however, with the best (score=1, Clark County) and worst (score=0, Lincoln County) performers both appearing in Nevada. This variance reflects the higher degree of local discretion in election administration in Nevada. The identity of those best and worst-performing counties also points to the urban and rural differences in voting access in the states. In Nevada in particular, urban counties perform best. Accounting for population, Nevada provides better electoral access on a population-weighted basis, but not on a county-by-county basis. Importantly, Nevada's population is highly concentrated in its urban areas, especially Las Vegas, so the vast majority of residents have good electoral access but the rural population in many cases does not.

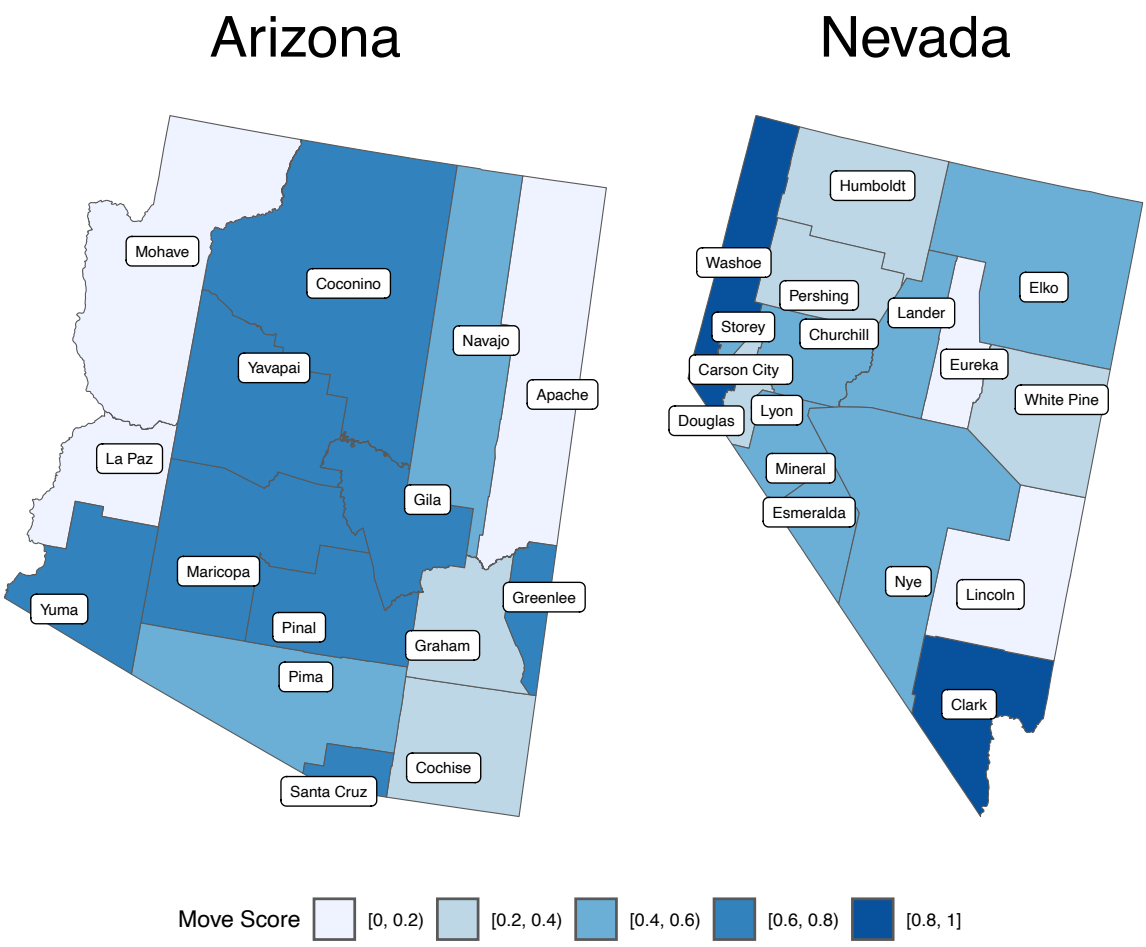
[9] In our appendix we also show a principal component analysis, lowering the dimensionality across a large number of variables, while retaining maximum information.

Table 3: Summary Statistics by State

	Arizona	Nevada
Mean	0.496	0.492
Median	0.603	0.438
Standard Deviation	0.249	0.281
Minimum	0.002	0
Maximum	0.800	1
Population-Weighted Score	0.612	0.932

Figure 1 below shows the county-level MOVE scores in Arizona (left) and Nevada (right). Arizona's The lowest value county in our index for Arizona is Apache County, which offers few of the services we examined. Apache County is in the extreme northeastern corner of the state and nearly 70% is part of the Navajo Nation. Perhaps not surprisingly, some of the more urban counties, such as Coconino (Flagstaff) and Maricopa (Phoenix) score relatively high on the index. Gila and Pinal Counties are adjacent to Maricopa County, including suburbs and exurbs from the Phoenix area. Perhaps more surprisingly, highly rural Greenlee County (population under 10,000) on the New Mexico border ranked relatively highly in Arizona. Greenlee County has a small population, but the population is clustered geographically around the mining industry, resulting in lower distances to the polls for their residents than others might face in rural counties.

Figure 1: MOVE Scores for Arizona and Nevada Counties, 2024



The Nevada counties show a clear urban-rural divide, with the largest population counties in Nevada taking the top positions in terms of access. Clark County (Las Vegas), Carson City (capital), and Washoe County (Reno) have the highest access by a significant margin. This contrasts in many cases with the CEA, which finds that urban counties often have lower-quality election administration (Ritter and Tolbert 2024: 1). At the bottom of the list, Lincoln (population less than 5,000) and Eureka Counties (less than 2,000 residents) are highly rural, low

population counties, but Esmeralda (approximately 750 residents) and Storey County (around 4,200 population) are sparsely populated and provide relatively high access.

On average, the Arizona counties rank higher than the Nevada counties: 0.635 versus 0.537. See Table 4 for the highest and lowest-scoring counties. The variance is high, however, and four Nevada counties have scores of 0.85 or higher and only one Arizona county is among those with the greatest electoral access. While urban counties, such as Clark County, Carson City, Washoe, and Pinal counties scored high. Low scoring counties could be found in both states, with most found in Arizona but the lowest scoring county across the two states is Lincoln County, Nevada. The common element is that all of the counties that provided very low electoral access were very rural, with low population density.

Table 4: Top and Bottom Ranked Counties in Arizona and Nevada

Top 5	Bottom 5
Clark, NV	Lincoln, NV
Carson City, NV	Mohave, AZ
Washoe, NV	Apache, AZ
Douglas, NV	Eureka, AZ
Pinal, AZ	La Paz, AZ

How do Local Voter Access Scores Relate to Population Resources?

As the resource-based model of political participation has shown, individuals with greater resources are better able to bear the costs of voting. For this reason, we include a measure of the distribution of relevant resources within the population, both as a whole and broken down by race. Racial discrimination—both the long-term effects of discrimination towards past generations of minorities and the effects of contemporary discrimination—can be seen in resource disparities between white and non-white populations in the United States. Hence, it is important to have overall measures, which can be used to distinguish between "resource-rich" and "resource-poor" counties, but also measures showing the relative status of minorities. The

included resource factors include measures of political, social, and economic autonomy and physical/mental health. At this point, we compile the following political, social, and economic autonomy measures, nearly all from Census data: percent of the voting age population that is registered to vote, percent in the labor force, median earnings, percent with a college education or better, and percent falling below the poverty level, and minority political representation in local elected office (county council seats). Within the physical/mental health category: percentage of the population with health insurance, life expectancy, infant mortality rates, maternal mortality rates, mortality rates due to heart disease, mortality rates due to lung cancer, mortality rates due to breast cancer, suicide rate, rates of diabetes, and rates of alcoholism and drug abuse.

Table 5 shows the correlations of our local vote access index with sociodemographic values of interest across our two states. In Nevada, voter access is highly (positively) correlated with high home values, the overall population (indicated by Clark, Carson City, and Washoe Counties at the top rank), and the college-educated population (concentrated in urban counties). In Arizona, the strong, positive correlations are with the Hispanic population (highly concentrated in urban Maricopa County) and the college-educated population (also concentrated in Maricopa and Pima counties). Surprisingly, Pima County which includes Tucson, scores in the middle of the Arizona levels, despite being a relatively educated and urban agglomeration. The county also includes part of the Tohono O'odham Nation and all of the San Xavier Indian Reservation and the Pasqua Yaqui Indian Reservation.

The vote access index is also high where there are significant Black and Hispanic population shares in both Arizona and Nevada. This may again be a function of urban access given that most of the Black and Hispanic populations in these two states are urban residents,

and rural areas are majority White and Native areas. We expect these correlations to be quite different across different state contexts, especially in the South and parts of the nation where Black and Hispanic populations are more likely to be rural.

In both states, the Native population share shows the strongest negative correlation with voting access. In both states, there is a negative correlation, but that correlation is particularly strong and negative in Arizona. Native population is the strongest overall correlate in Arizona. The value is also negative in Nevada, but not as strong a correlation as indicators of urbanity such as overall population and college-educated population. Again, we anticipate these values will change as our mix of states grow. However, we do not anticipate the negative correlation with the Native population to change significantly, as related research indicates that Native Americans face extremely high barriers to the ballot in every state in which they have a sizable population share (Tucker et al 2020).

Table 5: Correlations of Index with Sociodemographic Indicators, Arizona and Nevada

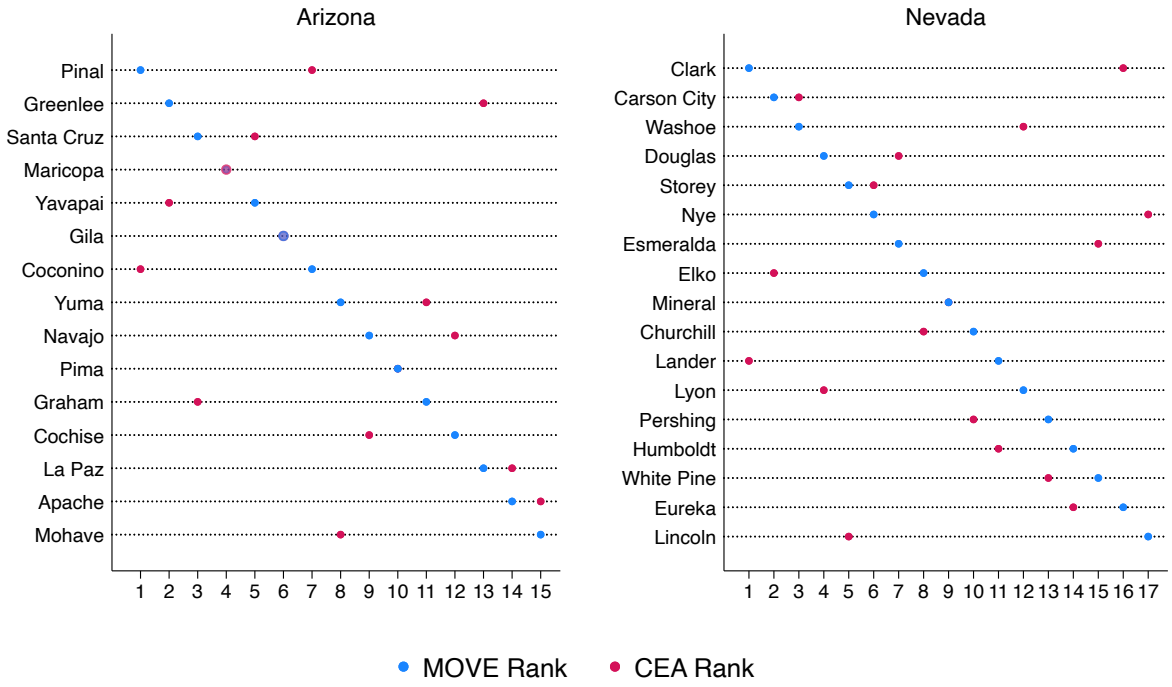
Sociodemographic Indicator	**Correlation, Arizona**	**Correlation, Nevada**
Median Home Value	-0.1090	0.5897
Native Population Share	-0.3904	-0.1886
Black Population Share	0.3155	0.2263
Overall Population	0.2099	0.5499
College Educated Population	0.3440	0.5777
Hispanic Population Share	0.4564	0.3322

How does the MOVE Score compare to the CEA?

The CEA indicator captures technical and legal aspects of county election administration and does not include the cost of voting indicators we collect. Thus, our indicators are distinct, and complementary, to the CEA. In this section, we compare the two indicators for our pilot states of Arizona and Nevada. It is very important to note that, given the small number of counties in these two states, the number of observations is low.

Figure 2 shows a comparison of the relative rankings of MOVE scores and CEA index scores for Arizona and Nevada's counties. The overall correlation across the CEA 2020 and the MOVE score for both states is 0.18. The correlation in Arizona is much higher (0.41) than in Nevada (-0.07). In some cases, such as Maricopa (#4) and Gila (#6) in Arizona, MOVE and CEA scores found the same relative rankings. The Arizona rankings are mostly similar, with the notable exception of Greenlee County, which the CEA ranks near the bottom and we rank near the top. In Nevada, the rankings in many cases are quite far apart, most notably for the urban counties of Clark (Las Vegas) and Washoe (Reno), which the MOVE score ranks much higher than the CEA index. The MOVE score is also considerably lower for several rural counties, namely Elko, Lander, Lyon, and Lincoln, than for the CEA score.

Figure 2: MOVE and CEA Rankings for Arizona and Nevada Counties



Importantly, these correlations capture a difference between our indicators and the CEA index. The CEA indicators reflect, in many cases, state laws and regulations as administered at

the county level, especially in more centralized electoral environments. Our indicators are oriented toward aspects of election administration over which local officials have some degree of discretion and must prioritize resource allocation depending on their funding base. Arizona's county officials are more constrained by the state than Nevada's highly decentralized system. In effect, Arizona's counties are often punished for the state's transgressions. In Nevada, counties have broad leeway to administer elections and interpret state laws and guidelines (Kropf 2016). Thus, we see more variance in their MOVE scores and more divergence between the MOVE score and the CEA index.

In the next section, we provide a case study of Elko County, Nevada to highlight the aspects of administration that are not well captured by state-level indicators (EPI or COVI), or even technical-legal indicators from the CEA. The CEA shows Elko County to have good election administration in relative terms for US counties and within Nevada. We show that Elko's cost of voting is in the middle range of the state. Regarding equity, Elko County has a troubling history of failing to provide electoral access to Native voters on the Duck Valley Reservation, which resulted in the county being sued before the 2022 election.

Case Study: Elko County, Nevada

The case of Elko County, Nevada highlights the important role of LEOs. Elko County was embroiled in a lawsuit for failing to provide voting opportunities for Native Americans on the Duck Valley Reservation in 2022 (Schroedel et al. 2024). The case was filed in state court, charging Elko County with violating state law which guarantees equal access to voting via a recent amendment to the state Constitution.

The Nevada Voters' Bill of Rights enshrined a range of protections, including the right to assistance in understanding a ballot, the right not to face intimidation in voting, and that all citizens have an equal opportunity to vote. Most of the Nevada population lives in the two counties that had the highest favorable vote on the constitutional amendment (Question 4) that enacted these protections—largely urban and Democratic Clark County (68.43%), and Washoe County (59.4%). The greatest opposition was in heavily rural counties, most notably Esmeralda (65.4%), Eureka (63.1%), and Lincoln (62.9%). The population differences across these counties were significant—Clark County alone had 605,243 "yes" votes and the three counties with the highest opposition had a total of 2,363 no votes. Only five counties voted in favor of the measure. The remaining twelve counties, including Elko County, are heavily Republican and voted against the measure, resulting in local jurisdictions being tasked with enforcing state electoral provisions that their voters rejected.

The Lawsuit

Attorneys representing the Shoshone and Paiute Tribes on the Duck Valley Reservation asked the Fourth District Court of Nevada to grant a preliminary injunction requiring Elko County to provide an early voting and registration site in Owyhee for the Duck Valley Reservation for the two weeks before Election Day (8 hours per day) and an Election Day polling place (12 hours). There is no residential mail service, so voting by mail is not a good option. Without relief, voters on the Duck Valley Reservation would need to travel 100 miles one way, with difficult road conditions, from the main reservation town of Owyhee to the county

clerk's office in Elko County.[10] The attorneys based their case on the Nevada constitutional amendment guaranteeing equal voting access:

> Each voter who is a qualified elector under the Constitution and is registered to vote in Accordance with Section 6 of this Article and the laws enacted the Legislature pursuant thereto has the right: to equal access to the elections system without discrimination, including without limitation, discrimination on the basis of race, age, disability, military service, employment or overseas residence (Nevada Constitution, Section 1A).

The plaintiffs provided evidence that tribal members had lower incomes, much higher poverty rates, less education, and limited vehicle ownership, all of which made overcoming the travel distance and impedance much more difficult than for non-reservation populations in Elko County.

The defense relied heavily on evidence provided by County Clerk Jakeman who is responsible for administering elections. The argument had three parts. First, voters on the reservation are not being treated differently than voters in other rural parts of the county. Second, turnout among registered Duck Valley voters was roughly comparable to that for the county as a whole, so there could not be discrimination. Third, the cost and additional labor to provide greater access on the reservation would impose a heavy financial burden on the county. The county had limited voting machines so it would be impossible to cover additional early sites or provide an Election Day polling place in Owyhee.

The third defense argument was simple—the county could not provide the voting equipment and trained election staff to handle the additional burden of providing two weeks of early voting in Owyhee and an Election Day polling place. To do so would result in the county suffering great harm (Greenburg 2022: 17-20). The county has a limited number of voting

[10] The plaintiffs provided copies of material posted by the county's department of planning and zoning, which stated that in county roads may be impassable during severe weather and that travelers had to be careful due to heavy boulders falling on vehicles traveling on roads that had not yet been closed.

machines, all of which must be checked and prepared before use. The county lacks trained staff and poll workers to handle the additional workload. Also, state law requires that an early voting site be staffed not only by poll workers but also by a deputy clerk. There would not be enough time to train either deputy clerks or additional poll workers. In short, the defense argued that Elko County lacked the financial resources, equipment, staff, and time to remedy these issues before the start of early voting.

The plaintiffs responded to each of the county's claims. They showed that only extremely low-population rural communities located off-reservation had to travel distance comparable to what the much larger Duck Valley population had to traverse. They did not dispute the high turnout rate among those registered to vote in Precinct 29, the reservation precinct, but said there were very few registered voters (150 in 2020) because of the travel distance barrier. The registration rate for the county was 69.60%, but it was from 17-26% among the voting-age population in Precinct 29.[11] The plaintiffs provided a detailed accounting of the costs associated with setting up and staffing both an early voting site and an Election Day polling place (Healy, Exhibit 1). For the two-week early voting site, the estimate was $8,710.62, which included pay for temporary staff, their travel costs to Owyhee, lodging and travel costs for a deputy clerk, costs for transporting equipment, and overhead. Similar calculations for an Election Day polling site came out to $2,136.24. The grand total in costs, leaving aside the possible purchase of an additional voting machine, came to $10,846.86.

At the end of testimony, the presiding judge asked a retired judge from another county to oversee settlement talks. Elko County settled the lawsuit and was forced to open an early voting

[11] There were arguments over the voting age population size on the reservation, which is there a range for the registration rate in Precinct 29. The lowest estimate was 668 and the highest was 996. This translates into under-registration on the reservation compared to the county of from 44%-52%.

site for the 2022 election but for fewer days than in other parts of the county. However, the county had to offer access equal to what was provided in the county seat for elections going forward.[12] After ballots were cast on the reservation voting site, the Elko County Sheriff, who is affiliated with the Constitutional Sheriff's movement, refused to pick up the ballots to return to the Elko County Clerk as is standard procedure. The tribe could not return the votes themselves to avoid accusations of ballot tampering. The Nevada Secretary of State eventually sent state troopers to the reservation to pick up the ballots.

The turnout in Precinct 29 in the 2022 off-year election was 226, roughly twice the turnout (115) in the 2020 presidential election year and 260% greater than its turnout (87) in the 2018 off-year election. This case clearly highlights the importance of the county level of electoral administration, which is the level at which the elections were administered, the lawsuit took place, and the level at which the election officials violated state law to deny the Duck Valley residents voting access.

Discussion

The efficiency, integrity, and responsiveness of local-level election administration directly impact the extent to which citizens can exercise their fundamental right to vote, acting as the cornerstone of a healthy and equitable democracy. As we have described, local election officials are responsible for managing polling places, ensuring they are accessible, well-equipped, and staffed with trained personnel. Further, they handle much of the voting information and voter registration, ensuring eligible voters are included in the election process,

[12] For the 2022 general election, the county agreed to provide eight hours of early voting and registration in Owyhee on October 27, October 28, November 3, and November 4 and four hours of early voting and registration on October 29. They also had to provide a drop box for Election Day voting. Starting with the 2024 election the county agreed to provide 12 full days of early voting and registration, as well as an Election Day polling place open for twelve hours. The plaintiffs agreed to provide a suitable site and provide polling workers to be trained by county officials.

fostering an active and informed electorate. This is particularly important for individuals from marginalized groups and underserved communities, where barriers to voting are often higher and there are fewer resources available to community members to participate in elections.

With this study, we begin to conceptualize and measure key factors of local election administration that impact voting access in the United States. One of our most important findings is that state-level rankings of electoral access are inadequate, given that the administration of elections is handled at the local level (Ritter and Tolbert 2024). Some counties in Nevada, which scores high on the state-level COVI measure of electoral access, garnered substantially lower scores in our study than counties in Arizona, which has a much lower state-level COVI ranking.

We created a new index of county-level voting equity, the MOVE score, using original pilot data from Arizona and Nevada. We construct individual measures for specific features of local election administration and combine these for an index of local voting access. Examining the trends in these measures, we find substantial variation within and across states in county-level election administration. These initial findings provide important insights into *where* and *who* has access to voting. Specifically, rural areas, communities with lower levels of education and income levels, and higher Native populations have lower levels of voting access. Further, our case study of Elko County illustrates the impact of local officials in facilitating, or in this case actively impeding, the ability of Native citizens to participate in elections. This case illustrates that the greater cost of voting for populations with lower incomes and levels of education and higher rates of poverty, in combination with biased local election administration practices can have substantial impacts on individuals' ability to vote, even in a state that has laws guaranteeing equal electoral opportunity to all citizens.

Our long-term goal is to integrate state and local ecosystems into nationwide voter equity scores. Given the results of this pilot, we are expanding our study in three ways. First, we are expanding our data and measures to include political, social, and economic autonomy and physical/mental health. The correlational evidence presented in the preceding section suggests these factors are correlated with our measures and further examination is warranted. As we mentioned earlier, we would prefer to find a way to collect resource data by racial group at the local or state level as it would provide us with more detail about the likely variation of demographic groups impacted by local election administration. We are much less optimistic about being able to obtain this racial breakdown of the data for the geographic area and period that we are including in this study. However, we plan to continue to collect it where possible.

Second, from a measurement perspective, it is important to capture both state and local election administration factors to gain a clear, more nuanced picture of voting access in the United States. Much of the quantitative scholarship on election administration has been at the state level, particularly with the development and widespread use of the COVI measures. Building on COVI, we added several additional measures including the strictness of ballot receipt deadlines (NCSL 2022), state financial support to assist local election officials (NCLS 2018), and support for voting equality (e.g., whether the state constitution includes a "free and equal election" clause, whether the purging of electoral rolls have been found to disproportionately impact minority populations, felony disenfranchisement, degree of partisanship in the redistricting process (Kruzel 2021), whether there have been threats against election officials in the state (Brennan Center 2021), the degree to which minority populations participate in politics, and histories of voting rights abuse). We plan to incorporate these data and

extended measures at the state level alongside the county measures we collect and the CEA as the project moves forward.

Finally, we are expanding the geographical area we are collecting data to include more — and eventually all – counties in the United States. We are currently collecting information in Wisconsin, Minnesota, Georgia, Pennsylvania, and South Dakota. This task is a significant undertaking given the data must be hand-collected which takes substantial time and resources. However, given the pilot results, we think this expansion is warranted and we have secured resources to hire research assistants for two additional years of data collection. At the most basic level, this is important for gaining a more complete picture of local and state-level voter access as we expand and refine our measures. For scholars, this extension of our data and measures to other counties and states will eventually provide complete coverage of the U.S. and provide scholars with the most fine-grained measure of election administration and voting access to date. Further, this expansion of our data and measures will be helpful to and likely used by practitioners and advocates in legal cases, and how to best deploy resources to promote more widespread election access.

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Appendix

Table 1A: County Index Values and Rank, Arizona

County	Additive Index	Arizona Rank	Diff from State Mean
Pinal Co	0.7995398	1	0.303
Greenlee Co	0.7437915	2	0.247
Santa Cruz Co	0.7104234	3	0.214
Maricopa Co	0.6625143	4	0.166
Yavapai Co	0.6580862	5	0.162
Gila Co	0.6515318	6	0.155
Coconino Co	0.6070126	7	0.111
Yuma Co	0.6032436	8	0.107
Navajo Co	0.5340258	9	0.038
Pima Co	0.5180889	10	0.022
Graham Co	0.3805297	11	-0.116
Cochise Co	0.3135125	12	-0.183
La Paz Co	0.1879683	13	-0.308
Apache County	0.0718197	14	-0.424
Mohave Co	0.002479	15	-0.494

Table 2A: County Index Values and Rank, Nevada

County	Additive Index	Nevada Rank	Diff from State Mean
Clark	1	1	0.507
Carson City	0.9310151	2	0.438
Washoe	0.8769224	3	0.384
Douglas	0.847413	4	0.355
Storey	0.5723577	5	0.080
Nye	0.5156652	6	0.023
Esmerelda	0.490593	7	-0.002
Elko	0.4751618	8	-0.017
Mineral	0.4376525	9	-0.055
Churchill	0.4326887	10	-0.060
Lander	0.4181511	11	-0.074
Lyon	0.3568195	12	-0.136
Pershing	0.3344743	13	-0.158
Humboldt	0.3107649	14	-0.182
White Pine	0.2613401	15	-0.231
Eureka	0.1122398	16	-0.380
Lincoln	0	17	-0.493