2024 EPI Methodology Report

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1 About the MIT Election and Data Science Lab (MEDSL)

By applying scientific principles to how elections are studied and administered, MEDSL aims to improve the democratic experience for all U.S. voters. MEDSL was founded at MIT in 2017 by Charles Stewart III. We are a dedicated group of social scientists and researchers committed to improving democracy in the United States by promoting the application of scientific principles to the understanding of election administration. The 2024 EPI was supported by the efforts of Charles Stewart III, Sean Greene, Claire DeSoi, Samuel Baltz, Zayne Sember, Honor Durham, Sina Shaikh, and Ning Soong at MEDSL as well as Stephen Pettigrew at the University of Pennsylvania. Previous versions were also supported by Stephen Pettigrew and Cameron Wimpy. MEDSL would like to thank the Pew Charitable Trusts for its initial support of the EPI, along with generous funding from the William and Flora Hewlett Foundation, Democracy Fund, and the provost of MIT.

2 Introduction

The Elections Performance Index (EPI) was originally released by the Pew Charitable Trusts in 2012 (covering data from the 2008 and 2010 elections) to be the first objective measure to comprehensively assess how election administration functions in each state. The index was updated by Pew following the 2012 and 2014 elections before transferring responsibility for subsequent updates of the index to the MIT Election Data and Science Lab (MEDSL) in 2017. The release of the index reflecting 2018, 2020, 2022, and 2024 data is under the responsibility of MEDSL.

From 2008 to 2018, the EPI consisted of 17 indicators:

- Data completeness
- Disability- or illness-related voting problems
- Mail ballots rejected
- Mail ballots unreturned
- Military and overseas ballots rejected
- Military and overseas ballots unreturned
- Online registration available
- Post-election audit required
- Provisional ballots cast
- Provisional ballots rejected
- Registration or absentee ballot problems
- Registrations rejected
- Residual vote rate
- Turnout
- Voter registration rate
- Voting information lookup tools
- Voting wait time

Two indicators were added to the EPI in 2020:

- Electronic Registration Information Center (ERIC) membership
- Risk-limiting audit required

Finally, the original disability- or illness-related voting problems indicator was retired in 2020, in favor of a new one. The new indicator measures a turnout differential between self-identified disabled and non-disabled voters.

By analyzing data on these indicators, the EPI makes it possible to compare election administration performance across states from one election cycle to the next and to begin to identify best practices and areas for improvement.

The 19 indicators can be used by policymakers, election officials, and others to shed light on issues related to such areas as voter registration, turnout, waiting times, absentee ballots, use of online technology, military and overseas voters, provisional ballots, access for people with disabilities, and the impact of voting machines or ballot design.

The online EPI interactive report presents these indicators in a format that allows a user

to dig deeper and find the context behind each measurement. Using this tool, the user can see individual state pages that tell the stories about the state and individual indicator pages that explain what each indicator means and how to interpret differences.

Although we are transparent about the assumptions we make, we understand that people may disagree about what ought to be included in such an index. Our tool provides users with the functionality to adjust the indicators to create their own index.

The EPI presented here is based on data measuring the 2008, 2012, 2016, 2020, and 2024 general elections.

2.1 How the EPI was developed

The EPI was initially developed and constructed by The Pew Charitable Trusts, which published the first three iterations of the index in 2013, 2014, and 2016, covering elections from 2008, 2010, 2012, and 2014. In 2017, management and future development of the EPI was passed to the MIT Election Data and Science Lab, which is dedicated to the nonpartisan application of scientific principles to election research and administration.

In the early stages of the index, Pew worked with Charles Stewart III, the Kenan Sahin Distinguished Professor of Political Science at the Massachusetts Institute of Technology and the founding director of the MIT Election Data and Science Lab, to convene an advisory group (see Appendix for full list of members) of leading state and local election officials from 14 states, as well as academics from the country's top institutions, to help guide the initial development of an Elections Performance Index.

The EPI advisory group met five times between July 2010 and July 2012 during the development phase of the project, and once in August 2013, after the first edition of the EPI had been released, to review its progress. In developing the index, the group borrowed the best ideas from indexes in other public policy areas, identified and validated existing data sources, and determined the most useful ways to group these data.

To be useful, an index must combine reliable data with an understanding of how elections function. Along with the advisory group, Pew surveyed a range of data sources to find approximately 40 potential indicators of election administration that could be used to understand performance or policy in this field. The challenge of identifying these data and compiling measurements resulted in Pew's February 2012 report "Election Administration by the Numbers," which provided an overview of elections data and how to use them.

Pew submitted these initial 40 measurements to strong validity and reliability tests and worked with the advisory committee from July 2010 to July 2012 to narrow them down. After the launch of the index, the indicators were reviewed for their performance and three more indicators were discussed for possible inclusion in the current edition of the Index. The 17 original indicators were the final measurements as decided in consultation with the advisory committee. We describe in more detail below how these indicators were chosen, where these data came from, how they were prepared, and how they are used in

the indicators.

In the summer of 2012, a team of academic researchers met at a two-day conference at MIT to subject all the proposed indicators to a thorough and rigorous scientific evaluation. The conference led to the removal of some indicators from the index, and led to a consideration of how other indicators are related to changes in policy and performance. Eventually, after the authors were given an opportunity to respond to comments and criticisms from conference participants, discussant feedback, and editor recommendations, the revised papers were collected together in a volume edited by Barry C. Burden and Charles Stewart III entitled *The Measure of American Elections*.[1]

After the EPI was transferred to MEDSL, the lab's advisory board took up responsibility for giving advice about the addition of new indicators and the possible retirement of existing indicators. The two new indicators added for the 2020 edition of the EPI and the revised disability indicator were considered by the advisory board.

2.2 Choice of indicators

The Elections Performance Index is currently built on 19 indicators, with an overall score that represents the average of all normalized indicator scores for each state.

Selecting indicators required balancing two broad considerations.

1. Any performance index, regardless of the subject, should reflect a comprehensive understanding of all salient features of the policy process being assessed.
2. Any indicator in the index must conform to a set of quality standards.

In developing the EPI, Pew, in consultation with Professor Stewart and the EPI advisory committee, pursued a systematic strategy to ensure that both of these considerations were given due weight.

Comprehensive understanding of election policy and administration

The initial conceptualization of election administration drew upon Heather Gerken's book *The Democracy Index*.[2] Building on this work, it became clear that a well-run election is one in which all eligible voters can straightforwardly cast ballots (convenience) and that only eligible voters cast ballots, which are counted accurately and fairly (integrity).

Elections can further be broken down into three major administrative phases: registration, voting, and counting.

We combined these two ideas into a rubric ensuring the index covers all important election administration features, summarized in the table below.

CONVENIENCE	INTEGRITY
REGIST	RATION
VOT	ING
COUN	TING

Each of the six cells in this table reflects a feature of election administration we sought to capture in the EPI. For instance, an EPI should strive to assess how easy it is for eligible voters to register (registration convenience) and how well registration lists are maintained, to ensure that ineligible voters are removed (registration integrity).

This rubric was used throughout the development process to help understand which aspects of elections were well-covered by the available indicators and to illuminate areas in which further work was needed to develop indicators.

Available indicators measure voting convenience far more than security and integrity—a limitation of current election data. Developing a more robust set of integrity-related indicators is a priority for the EPI project.

It was also apparent that the row depicting "voting" is the phase in which there is the most objective information to help assess the performance of U.S. elections. The mechanics of voting produce copious statistics about how many people engage in different modes of voting (in person on Election Day, in-person early voting, and absentee/vote by mail), along with subsidiary statistics about those modes (for example, how many absentee ballots are requested, how many are returned, how many are rejected and for what reason, and the like). A close second is "registration," which also produces many performance statistics as a byproduct of the administrative workflow.

"Counting" is an area where high-quality measures of election performance remain in relatively short supply. The measures that do exist, such as whether a state required post-election audits, tend to reflect inputs into election administration, rather than outputs of the process. By inputs, we mean that the measures reflect the presence of "best practices" set into law by the state, rather than outputs that assess the data produced by the performance of a particular election practice. As with the issue of voting security and integrity, vote counting is one area in which effort must be expended in the future so that the EPI might cover the process of voting more comprehensively.

Quality standards

The first step of developing the EPI involved taking the conceptualization of election administration and policy reflected in the previous table and brainstorming about the measures that could be associated with each of the six cells.[3] That process, done in collaboration with the advisory committee, initially yielded more than 40 indicators. Some were well-established and easy to construct, such as a state's turnout rate. Others were less so, such as the correlation between canvassed vote counts and audited vote counts.

To move an indicator from the list of "candidate indicators" to those that appear in the index, we developed criteria for judging whether the indicator was valid and reliable enough to include. Most policy indicator projects think about this issue; with the advisory group, we surveyed the criteria behind many of today's leading policy indexes. These included projects such as the Environmental Performance Index,[4] County Health Rankings & Roadmaps,[5] World Justice Project Rule of Law Index,[6] and the Annie E. Casey Foundation's Kids Count Data Book.[7]

Drawing on these efforts, the EPI adopted the following criteria for helping to decide which candidate indicators to include in the current release of the Elections Performance Index.

1. **Any statistical indicator included in the EPI must be from a reliable source.** Preferably, the source should be governmental. If not, it should demonstrate the highest standards of scientific rigor. Consequently, the EPI relies heavily on sources such as the U.S. Election Assistance Commission, the U.S. Census Bureau, and state and local election departments.

2. **The statistical indicator should be available and consistent over time.** Availability over time serves two purposes. First, from a methodological perspective, it allows us to assess the stability of the measure, which is a standard technique for assessing reliability. Second, it allows the index to evolve to reflect developments with the passing of elections; states should be able to assess whether they are improving and should be able to calibrate their most recent performance against past performance, overall goals, and perceived potential. The issue of consistency is key because we want to make sure that an indicator measures the same thing over time, so that any changes in a measure reflect changes in policy or performance, not changes in definition.

3. **The statistical indicator should be available and consistent for all states.** Because the EPI seeks to provide comparable measurements, it is important that the measures included in the index be available for all 50 states, plus the District of Columbia. However, this is not always possible, given the variation in some state election practices. For instance, some states with Election Day registration do not require the use of provisional ballots; therefore, provisional balloting statistics may not be available for these states. With this in mind, some candidate indicators were excluded because data were available for too few states or because state practices varied so widely that it was impossible to form valid comparisons.

4. **The statistical indicator should reflect a salient outcome or measure of good elections.** In other words, the indicator should reflect a policy area or feature of elections that either affects many people or is prominently discussed in policy circles. An example of a policy area that is salient but affects relatively few voters concerns overseas and military voters, who comprise a small fraction of the electorate but about whom Congress has actively legislated in recent years.

5. **The statistical indicator should be easily understood by the public and have relatively unambiguous interpretations.** That an indicator should be easily understood is an obvious feature of a policy index. The desire to include indicators with unambiguous interpretations sometimes presented a challenge, for at least two reasons. First, values of some indicators were sometimes the consequence of policy and demographic features of the electorate. For instance, registration rates depend on both state laws and demographic factors like education and political interest. We included such indicators only if policy changes clearly drove measurable change. Second, some features of election administration, such as rejection rates of new registrations and absentee ballots, are inherently ambiguous: high rejection rates could signal administrative problems or large numbers of ineligible applicants. We excluded highly ambiguous indicators and retained those warranting further research.

6. **The statistical indicator should be produced in the near future.** Because the EPI is an ongoing project, it is important that any indicators continue in the future. In addition, because one function of the EPI is to document changes in policy outputs as states change their laws and administrative procedures, it is important to focus on indicators that can document the effects of policy change. There is no guarantee that any of the indicators in the EPI today will remain in the future. However, the indicators that were chosen were the ones most likely to continue, because they are produced by government agencies or as part of ongoing research projects.

2.3 Aggregation of indicators

The EPI is built on 19 indicators of electoral performance. These can be examined individually to understand how particular states perform, or aggregated into a composite measure for cross-state comparison.

The overall state percentiles and "performance bars" used in the EPI interactive report are based on a method that essentially calculates the average of all indicator rankings for each state. This, by nature of averages, weighs the indicators equally.[8]

In addition, the summary measurement, which is calculated using the same basic averaging, is what drives the performance bar chart, whether a user selects all of the indicators in the interactive report or only a few. However, implementing this method required adjustment for two reasons: missing values and the issue of scaling.

Missing values

As with the previous EPI, some states were missing data due to the failure of the state or its counties to provide the information needed to calculate the indicator.[9] The question arises as to how to rank states in these circumstances. For instance, three states (Alabama, Connecticut, and Mississippi) did not report enough data to calculate the percentage of mail ballots that were not returned in 2024.

Scaling

A further challenge was scaling the indicators before combining them. We scaled each indicator from 0 to 1, assigning 0 to the lowest-performing state and 1 to the highest, using separate scales for presidential years (2008, 2012, 2016, 2020, 2024) and midterm years (2010, 2014, 2018, 2022).

We normalized rankings separately for presidential and midterm years. For presidential years, we set the top-ranked state for 2008, 2012, 2016, 2020, and 2024 combined to 1 (or 100%) and the bottom-ranked state to zero. For midterm years, we similarly set the top-ranked state for 2010, 2014, 2018, and 2022 combined to 1 and the bottom-ranked state to zero. Doing so allowed comparisons across years for presidential elections of the same type.[10] For the 2024 EPI, Indiana's 2016 absentee non-return rate (0.2%) was used as the historical upper bound set to 1, while New Jersey in 2008 had the highest rate (43%) and so was the lower bound set to 0.[11]

Since most indicators do not naturally fall between 0 and 1, we set bounds using historical data: each state receives a score reflecting proportionately where its value falls between the historical high and low. For the residual vote rate, the highest was 3.85% (Illinois, 2000) and the lowest was 0.17% (District of Columbia, 2012).

Therefore, the lowest residual vote rate found between 2000 and 2024 (0.17% for the District of Columbia in 2012) would be set to 1 (a lower residual vote rate indicates fewer voting accuracy problems) and the highest residual vote rate (3.85 percent for Illinois in 2000)

would be set to zero. All of the remaining states would receive a score between 0 and 1 that reflected proportionately how far within this range each state's value was.

The two indicators added in 2020—risk-limiting audits and ERIC membership—highlight widely recognized best practices. However, standard normalization would have penalized most states for not yet adopting them. We therefore phase in these indicators gradually, boosting scores for states that adopt these practices without harming the scores of others.

A shortcoming of the overall approach is that it may make too much of small differences in performance, especially when most states perform at the high end of the range, with only a few at the low end. An example is data completeness, on which many states had rates at or near 100 percent. Thus it seems more valid to use the raw value of the indicator in the construction of a composite index score, rather than the normalized score.

3 Data overview

The Elections Performance Index relies on a variety of data sources, including Census data, state-collected data, Pew reports, and public surveys. The data sources were selected based on significance at the state level, data collection practices, completeness, and subject matter. Although we present an introduction to these data sources, additional information on their strengths and limitations can be found in "Section 1: Datasets for Democracy" in the 2012 Pew report "Election Administration by the Numbers: An Analysis of Available Datasets and How to Use Them."

3.1 U.S. Census Bureau

In November of every federal election year, the U.S. Census Bureau conducts a Voting and Registration Supplement (VRS) as part of its Current Population Survey (CPS). The VRS surveys individuals on their election-related activities. The EPI includes three indicators from this data source: disability- or illness-related voting problems, registration or absentee ballot problems, and the voter registration rate.

The CPS is a monthly survey, but the VRS is biennial, conducted every other November after a federal election. In 2022, the VRS interviewed approximately 64,000 eligible voters, down from 134,000 in 2020.[12] In 2024, the survey included approximately 65,000 eligible voters. While on occasion special questions are included in the VRS, the core set of questions is limited and ascertains whether the respondent voted in the most recent federal election and had been registered to vote in that election. Eligible voters who reported that they did not vote in the most recent federal election are asked why they did not vote.

3.2 Survey of the Performance of American Elections

The Survey of the Performance of American Elections (SPAE) is a public interest survey. The SPAE surveyed 10,000 registered voters (200 from each state) via internet in the week after the 2008 presidential election, and 10,200 voters after the 2012 and 2016 presidential elections and 2014 midterm election. The District of Columbia was added in 2012. The SPAE surveyed a total of 18,200 voters in 2020 (oversampling 1,000 voters in 10 states, in addition to the standard 200 observations in the remaining states and DC) and a total of 10,100 voters in 2024. Data from this survey were used to create an indicator measuring waiting time to vote.

3.3 Election Administration and Voting Survey

The U.S. Election Assistance Commission (EAC) administers the Election Administration and Voting Survey (EAVS), providing jurisdiction-level data from each state and the District of Columbia on a variety of topics related to election administration for each federal election. EAVS data make up the majority of the EPI's indicators and are used for indicators related to turnout, registration, absentee ballots, military and overseas ballots, and provisional ballots.

3.4 University of Florida Election Lab

The University of Florida Election Lab (formerly the United States Elections Project) provides data on the voting-eligible population and turnout for presidential and midterm elections.

3.5 Being Online Is Not Enough and Being Online Is Still Not Enough

Pew's reports *Being Online Is Not Enough* (2008), *Being Online is Still Not Enough* (2011), and *Online Voter Lookup Tools* (2013) reviewed the election websites of all 50 states and the District of Columbia. The reports examined whether these sites provide a series of lookup tools to assist voters. The 2008 report identified whether states had online tools for checking registration status and locating a polling place in time for the November 2008 election. The 2011 and 2013 reports identified whether states provided those two as well as three others, for finding absentee, provisional, and precinct-level ballot information, in time for the November 2010 and November 2012 elections. The tool scores for both years were used to evaluate states on their election websites. MEDSL research staff have updated these values since 2016.

3.6 Data cleaning and modification of the EAVS

EAVS data, historically, has had substantial missing or anomalous information. As in previous years, the EAC took multiple steps to correct and confirm the 2024 EAVS prior to its publication. To ensure that the EAVS data included in the EPI were as accurate and complete as possible, we conducted a multi-step validation and correction process.

Missing data

In previous iterations of the EPI, when states lacked data from all jurisdictions, we contacted them directly. For partial gaps, we followed up unless data were at least 85% complete and no high-population jurisdiction was missing. When data were less than 85% complete, we always followed up. For 2024, we reached out to all states, even those with little or no missing data apparent in EAVS, to give them an opportunity to provide any updates or corrections they may have.

We used several strategies to collect missing data. In all cases, we contacted the state to confirm that data from the EAVS were correct and to see if additional information was available. We contacted a state at least three times and reached out to at least two staff people before giving up.

In some cases, we succeeded in gathering missing data ourselves. For example, we found the number of voters from each jurisdiction who participated in the election on various state election websites, even if it had not been submitted to the Election Assistance Commission. When missing data were found, either from the state or through our own efforts,

the data were added to the EAVS dataset and used to calculate the indicators.

Finally, we imputed some of the missing data when the EAVS survey asked for the same information in different places throughout its questions. If the missing data could be found in another question, we would replace the missing value with this question's value.

Anomalous data

For the 2024 EPI, we expanded our validation techniques to reflect all of the Math and Logic Validation Rules found in Appendix B Tables 1 and 2 of the EAVS 2024 Comprehensive Report.[13] We flagged all data used to calculate indicators that violated at least one of these rules and either determined that variables not used to calculate our indices were responsible (and thus kept the data as is), or contacted the state to understand why the data were flagged and if/how it should be fixed.

The second strategy was to search for statistically improbable data by measuring the extremity of the changes in responses to previous releases of the EAVS. We measured extremity relative to the average change across states as well as across counties within individual states. The potentially anomalous values were examined individually, and a decision about how to resolve the anomaly was made on a case-by-case basis. In most cases, the jurisdiction reporting the data was contacted for clarification or correction. This usually resulted in a correction of previously reported statistics. In a few cases, the originally reported data were revealed to be unreliable, in which case the data were set to missing. If we were able to gather any new data to replace the anomalous information, we included the new information in the dataset and used it to develop the indicators.

Wisconsin presented a particular challenge during validation with several municipalities appearing to underreport absentee ballot usage. This was confirmed upon reaching out to the Wisconsin Election Commission (WEC) and receiving updated values for the specific municipalities flagged by our validation checks. Comparing the EAVS data with these updated values to the 2024 General Election Voting and Registration Statistics Report[14] released by the WEC, we noted further discrepancies. As a precaution, the EPI was estimated using the three different versions of the data (original EAVS, corrected EAVS, and WEC report) to assess the sensitivity to these data discrepancies. Wisconsin's rank remained stable no matter which data were used and its index value varied only slightly. Ultimately, the corrected EAVS data were used in the final calculation of the index.

3.7 Indicator summaries and data sources

Table 1: Online Capability Indicators

Indicator	Data source	Scaling anchors	Percent of missing data	Observed range of values
Voting information lookup tools	'Being Online is Not Enough' (2008), 'Online Voter Lookup Tools' (2013)	**On-year** 0: 0.000 1: 1.000 **Off-year** 0: 0.000 1: 1.000	08: 0.00 10: 0.00 12: 0.00 14: 0.00 16: 0.00 18: 0.00 20: 0.00 22: 0.00 24: 0.00	08: [0,1] 10: [0,1] 12: [0,1] 14: [0,1] 16: [0,1] 18: [0,1] 20: [0,1] 22: [0,1] 24: [0,1]
Online registration available	State election division information	**On-year** 0: 0.000 1: 1.000 **Off-year** 0: 0.000 1: 1.000	08: 0.00 10: 0.00 12: 0.00 14: 0.00 16: 0.00 18: 0.00 20: 0.00 22: 0.00 24: 0.00	08: [0,1] 10: [0,1] 12: [0,1] 14: [0,1] 16: [0,1] 18: [0,1] 20: [0,1] 22: [0,1] 24: [0,1]

Table 2: Registration

Indicator	Data source	Scaling anchors	Percent of missing data	Observed range of values
Electronic Registration Information Center (ERIC) membership	ERIC website	**On-year** 0: NA 1: 1.000 **Off-year** 0: NA 1: 1.000	20: 0.00 22: 0.00 24: 0.00	2020: [NA,1] 2022: [NA,1] 2024: [NA,1]
Registration or absentee ballot problems	VRS	**On-year** 0: 0.139 1: 0.005 **Off-year** 0: 0.102 1: 0.003	08: 0.00 10: 0.00 12: 0.00 14: 0.00 16: 0.00 18: 0.00 20: 0.00 22: 0.00 24: 0.00	08: [0.008,0.134] 10: [0.007,0.102] 12: [0.012,0.138] 14: [0.009,0.097] 16: [0.010,0.139] 18: [0.009,0.076] 20: [0.005,0.117] 22: [0.003,0.060] 24: [0.012,0.118]
Registrations rejected	EAVS	**On-year** 0: 0.672 1: 0.000 **Off-year** 0: 0.667 1: 0.000	12: 17.97 14: 11.85 16: 9.50 18: 16.45 20: 12.48 22: 14.61 24: 12.44	08: [0.000,0.369] 10: [0.000,0.555] 12: [0.000,0.209] 14: [0.000,0.134] 16: [0.000,0.672] 18: [0.000,0.638] 20: [0.000,0.604] 22: [0.000,0.667] 24: [0.000,0.583]
Voter registration rate	VRS	**On-year** 0: 0.696 1: 0.959 **Off-year** 0: 0.640 1: 0.935	08: 0.00 10: 0.00 12: 0.00 14: 0.00 16: 0.00 18: 0.00 20: 0.00 22: 0.00 24: 0.00	08: [0.696,0.918] 10: [0.658,0.868] 12: [0.709,0.925] 14: [0.640,0.867] 16: [0.719,0.936] 18: [0.709,0.908] 20: [0.791,0.959] 22: [0.726,0.935] 24: [0.754,0.934]

Table 3: Voting

Indicator	Data source	Scaling anchors	Percent of missing data	Observed range of values
Disability access	VRS	**On-year** 0: -0.165 1: 0.000 **Off-year** 0: N/A 1: N/A	20: 0.00 22: 0.00 24: 0.00	20: [-0.165,0.000] 24: [-0.161,0.000]
Turnout	United States Elections Project	**On-year** 0: 0.422 1: 0.800 **Off-year** 0: 0.283 1: 0.642	08: 0.00 10: 0.00 12: 0.00 14: 0.00 16: 0.00 18: 0.00 20: 0.00 22: 0.00 24: 0.00	08: [0.490,0.781] 10: [0.296,0.560] 12: [0.445,0.761] 14: [0.283,0.585] 16: [0.422,0.742] 18: [0.393,0.642] 20: [0.550,0.800] 22: [0.313,0.624] 24: [0.503,0.766]
Voting wait time	SPAE, CCES	**On-year** 0: 61.50 1: 0.11 **Off-year** 0: 15.40 1: 0.41	08: 0.00 10: 0.00 12: 0.00 14: 0.00 16: 0.00 18: 0.00 20: 0.00 22: 0.00 24: 0.00	08: [2.480,61.502] 12: [1.960,44.977] 14: [0.406,8.754] 16: [0.489,18.837] 18: [0.456,15.396] 20: [0.105,42.072] 22: [1.107,10.898] 24: [2.513,21.200]

Table 4: Military and Overseas Voters

Indicator	Data source	Scaling anchors	Percent of missing data	Observed range of values
Military and overseas ballots rejected	EAVS	**On-year** 0: 0.500 1: 0.000 **Off-year** 0: 0.253 1: 0.000	12: 7.89 14: 6.31 16: 1.08 18: 9.07 20: 2.66 22: 1.80 24: 7.11	08: [0.007,0.129] 10: [0.000,0.253] 12: [0.002,0.206] 14: [0.000,0.161] 16: [0.000,0.500] 18: [0.003,0.152] 20: [0.000,0.051] 22: [0.000,0.099] 24: [0.000,0.108]
Military and overseas ballots unreturned	EAVS	**On-year** 0: 0.567 1: 0.000 **Off-year** 0: 0.880 1: 0.013	12: 5.39 14: 5.03 16: 0.73 18: 5.19 20: 0.52 22: 1.76 24: 4.64	08: [0.143,0.535] 10: [0.013,0.880] 12: [0.115,0.474] 14: [0.103,0.848] 16: [0.000,0.459] 18: [0.104,0.774] 20: [0.000,0.565] 22: [0.076,0.772] 24: [0.063,0.567]

Table 5: Mail Ballots

Indicator	Data source	Scaling anchors	Percent of missing data	Observed range of values
Mail ballots rejected	EAVS	**On-year** 0: 0.018 1: 0.000 **Off-year** 0: 0.022 1: 0.000	12: 4.89 14: 2.22 16: 2.52 18: 1.90 20: 2.34 22: 2.05 24: 1.14	08: [0.000,0.010] 10: [0.000,0.013] 12: [0.000,0.009] 14: [0.000,0.013] 16: [0.000,0.009] 18: [0.000,0.012] 20: [0.000,0.018] 22: [0.000,0.022] 24: [0.000,0.017]
Mail ballots unreturned	EAVS	**On-year** 0: 0.434 1: 0.003 **Off-year** 0: 0.712 1: 0.000	12: 4.43 14: 0.73 16: 0.38 18: 0.55 20: 0.18 22: 0.19 24: 5.00	08: [0.016,0.434] 10: [0.000,0.516] 12: [0.007,0.294] 14: [0.009,0.495] 16: [0.003,0.291] 18: [0.005,0.328] 20: [0.016,0.273] 22: [0.009,0.712] 24: [0.006,0.319]

Table 6: Provisional Ballots

Indicator	Data source	Scaling anchors	Percent of missing data	Observed range of values
Provisional ballots cast	EAVS	**On-year** 0: 0.131 1: 0.000 **Off-year** 0: 0.113 1: 0.000	12: 4.36 14: 3.37 16: 3.36 18: 1.28 20: 14.89 22: 4.36 24: 3.44	08: [0.000,0.065] 10: [0.000,0.052] 12: [0.000,0.131] 14: [0.000,0.113] 16: [0.000,0.089] 18: [0.000,0.078] 20: [0.000,0.068] 22: [0.000,0.031] 24: [0.000,0.050]
Provisional ballots rejected	EAVS	**On-year** 0: 0.019 1: 0.000 **Off-year** 0: 0.011 1: 0.000	12: 4.80 14: 3.61 16: 3.74 18: 1.39 20: 11.90 22: 4.51 24: 0.46	08: [0.000,0.019] 10: [0.000,0.008] 12: [0.000,0.018] 14: [0.000,0.007] 16: [0.000,0.015] 18: [0.000,0.011] 20: [0.000,0.009] 22: [0.000,0.005] 24: [0.000,0.012]

Table 7: Data Transparency

Indicator	Data source	Scaling anchors	Percent of missing data	Observed range of values
Post-election audit required	EAVS Statutory Overview	**On-year** 0: 1.000 1: 0.000 **Off-year** 0: 1.000 1: 0.000	08: 0.00 10: 0.00 12: 0.00 14: 0.00 16: 0.00 18: 0.00 20: 0.00 22: 0.00 24: 0.00	08: [0,1] 10: [0,1] 12: [0,1] 14: [0,1] 16: [0,1] 18: [0,1] 20: [0,1] 22: [0,1] 24: [0,1]
Data completeness	EAVS	**On-year** 0: 0.000 1: 1.000 **Off-year** 0: 0.594 1: 1.000	08: 0.00 10: 0.00 12: 0.00 14: 0.00 16: 0.00 18: 0.00 20: 0.00 22: 0.00 24: 0.00	08: [0.000,1.000] 10: [0.594,1.000] 12: [0.582,1.000] 14: [0.625,1.000] 16: [0.744,1.000] 18: [0.765,1.000] 20: [0.863,1.000] 22: [0.804,1.000] 24: [0.558,1.000]
Risk-limiting audit required	National Conference of State Legislatures and state election offices	**On-year** 0: NA 1: 1.000 **Off-year** 0: NA 1: NA	20: 0.00 22: 0.00 24: 0.00	20: [NA,1] 22: [NA,1] 24: [NA,1]

4 Biggest Movers from 2020 to 2024

Given differences in the overall electoral environment and how the EPI is calculated in midterm versus presidential election years, comparing 2024 to 2020 provides the most methodologically valid assessment of how election performance in states has changed over time. At the same time, the 2020 election was conducted under extraordinary circumstances. The COVID-19 pandemic prompted rapid, widespread changes to election administration, including emergency expansions of vote-by-mail, shifts in polling place availability, and altered provisional ballot practices across many states. Some of the largest changes observed between 2020 and 2024 may therefore reflect a return to pre-pandemic administrative baselines rather than a genuine improvement or decline in underlying performance. These patterns should be interpreted accordingly.

Tables 8 and 9 show the five states with the largest improvement and the five with the largest decline in their EPI composite score between the 2020 and 2024 presidential elections. A positive rank change indicates that a state moved up in the national rankings.

Table 8: Largest Improvement (2020 to 2024)

State	Index (2020)	Index (2024)	Index Change	Rank (2020)	Rank (2024)	Rank Change
Kansas	0.740	0.811	+0.071	44	23	+21
Oklahoma	0.710	0.771	+0.060	49	39	+10
New Mexico	0.818	0.865	+0.048	25	7	+18
North Carolina	0.759	0.801	+0.041	40	30	+10
New Hampshire	0.761	0.799	+0.038	39	31	+8

Table 9: Largest Decline (2020 to 2024)

State	Index (2020)	Index (2024)	Index Change	Rank (2020)	Rank (2024)	Rank Change
Hawaii	0.809	0.729	-0.080	28	46	-18
Montana	0.787	0.717	-0.070	36	48	-12
Iowa	0.877	0.817	-0.060	3	19	-16
Colorado	0.864	0.813	-0.051	8	22	-14
North Dakota	0.877	0.826	-0.051	5	16	-11

For each of the states above, Tables 10 and 11 identify the three indicators with the largest improvement and the three with the largest decline between 2020 and 2024, measured as the change in normalized score on a 0–1 scale. Indicators for which data were available in only one of the two years are noted as having incomplete data.

Table 10: Indicators Driving Improvement (2020 to 2024)

State	Top improvements	Top declines
Kansas	Online information (+0.40)	Provisional ballots rejected (-0.17)
	Mail ballots not returned (+0.26)	Voter turnout (-0.07)
	Registration problems (+0.11)	
	Mail ballots rejected (incomplete data)	
	Registrations rejected (incomplete data)	
Oklahoma	Wait time (+0.21)	UOCAVA ballots not returned (-0.10)
	Disability access (+0.14)	Voter turnout (-0.05)
	Provisional ballots rejected (+0.08)	UOCAVA ballots rejected (-0.01)
New Mexico	Mail ballots rejected (+0.95)	Disability access (-0.39)
	Wait time (+0.20)	UOCAVA ballots not returned (-0.23)
	Registration rate (+0.17)	Voter turnout (-0.04)
North Carolina	UOCAVA ballots not returned (+0.68)	Provisional ballots rejected (-0.14)
	Registration rate (+0.15)	Mail ballots not returned (-0.11)
	Disability access (+0.14)	Wait time (-0.08)
New Hampshire	Post-election audit (+1)	Disability access (-0.23)
	Residual vote rate (+0.15)	Registration problems (-0.10)
	Mail ballots rejected (+0.03)	UOCAVA ballots not returned (-0.04)

Table 11: Indicators Driving Decline (2020 to 2024)

State	Top improvements	Top declines
Hawaii	UOCAVA ballots rejected (+0.01)	Registration rate (-0.23) Disability access (-0.22) Voter turnout (-0.19)
Montana	Disability access (+0.14) Registration problems (+0.07) Mail ballots not returned (+0.02)	EAVS data completeness (-0.22) Registration rate (-0.17) UOCAVA ballots not returned (-0.16) Registrations rejected (incomplete data)
Iowa	Disability access (+0.20) Mail ballots rejected (+0.05)	EAVS data completeness (-0.39) Residual vote rate (-0.13) Registration problems (-0.13) ERIC membership (incomplete data) Registrations rejected (incomplete data) UOCAVA ballots not returned (incomplete data) UOCAVA ballots rejected (incomplete data)
Colorado	Registration rate (+0.01)	Mail ballots rejected (-0.24) Registrations rejected (-0.22) Registration problems (-0.11)
North Dakota	Mail ballots not returned (+0.22) Disability access (+0.13) UOCAVA ballots not returned (+0.06)	Post-election audit (-1) Residual vote rate (-0.09) Wait time (-0.04)

5 Indicators in detail

5.1 Data completeness

5.1.1 *Data Source*

Election Administration and Voting Survey

The starting point for managing elections using metrics is gathering and reporting core data in a systematic fashion. The independent U.S. Election Assistance Commission (EAC) through its Election Administration and Voting Survey (EAVS) has established the nation's most comprehensive program of data-gathering in the election administration field. The greater the extent to which local jurisdictions gather and report core data contained in the EAVS, the more thoroughly election stakeholders will be able to understand key issues pertaining to the conduct of elections.

The nature of the items included in the EAVS makes it the logical choice for assessing the degree to which election jurisdictions gather and make available basic data about the performance of election administration in states and local voting. The EAVS is a comprehensive survey consisting of six sections: voter registration, the Uniformed and Overseas Citizens Absentee Voting Act (UOCAVA) voting, domestic absentee voting, election administration, provisional ballots, and Election Day activities. The EAVS asks states and localities for basic data associated with each federal election: how many people voted, the modes they used to vote, and so forth. The survey is responsive to EAC mandates to issue regular reports, given in the National Voter Registration Act (NVRA), the UOCAVA, and the 2002 Help America Vote Act (HAVA). The 2024 EAVS survey instrument is 60 pages long, and the dataset produced by it included over 500 variables.

While states are required to provide some of the information requested in the EAVS, other items are not mandatory. Therefore, in using the EAVS to measure the degree to which states report basic data related to election administration, it is important to distinguish between what is basic among the data that are included in the EAVS and what may be considered either secondary or (more often) a more-detailed look at basic quantities. The data completeness measure is based on the reporting of basic measures.

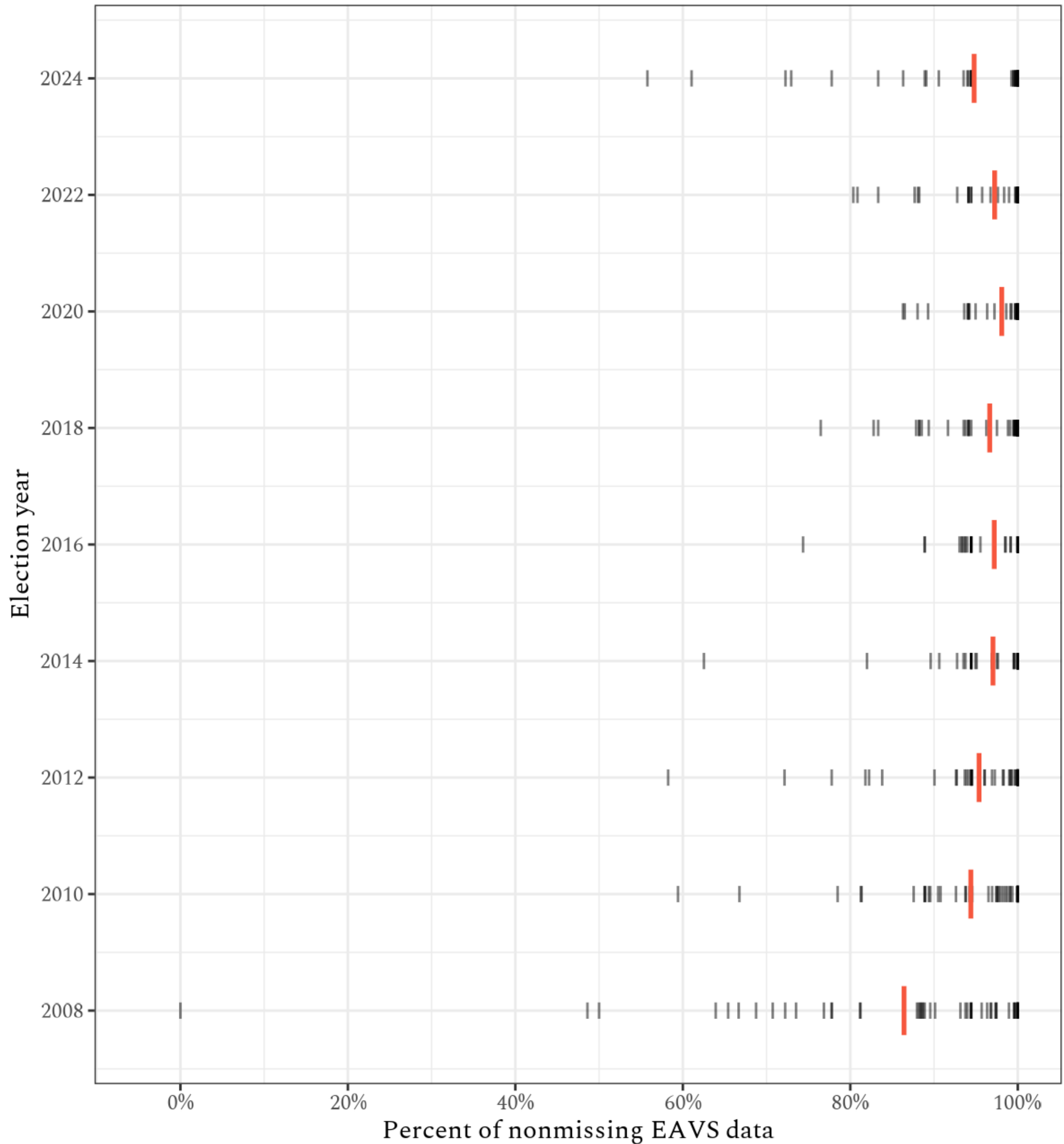
The central idea of this measure is to assess states according to how many counties report core statistics that describe the workload associated with conducting elections. The completeness measure starts with 15 survey items that were considered so basic that all jurisdictions should be expected to report them, for the purpose of communicating a comprehensive view of election administration in a community:

1. New registrations received.
2. New valid registrations received.
3. Total registered voters.
4. Provisional ballots submitted.
5. Provisional ballots rejected.
6. Total ballots cast in the election.
7. Ballots cast in person on Election Day.[15]
8. Ballots cast in early voting centers.[16]
9. Ballots cast absentee.
10. Civilian absentee ballots transmitted to voters.
11. Civilian absentee ballots returned for counting.
12. Civilian absentee ballots accepted for counting.
13. UOCAVA ballots transmitted to voters.
14. UOCAVA ballots returned for counting.
15. UOCAVA ballots counted.

Added to these 15 basic measures are three that help construct indicators used in the election index:

16. Invalid or rejected registration applications.
17. Absentee ballots rejected.
18. UOCAVA ballots rejected.

Figure 1: EAVS Data Completeness



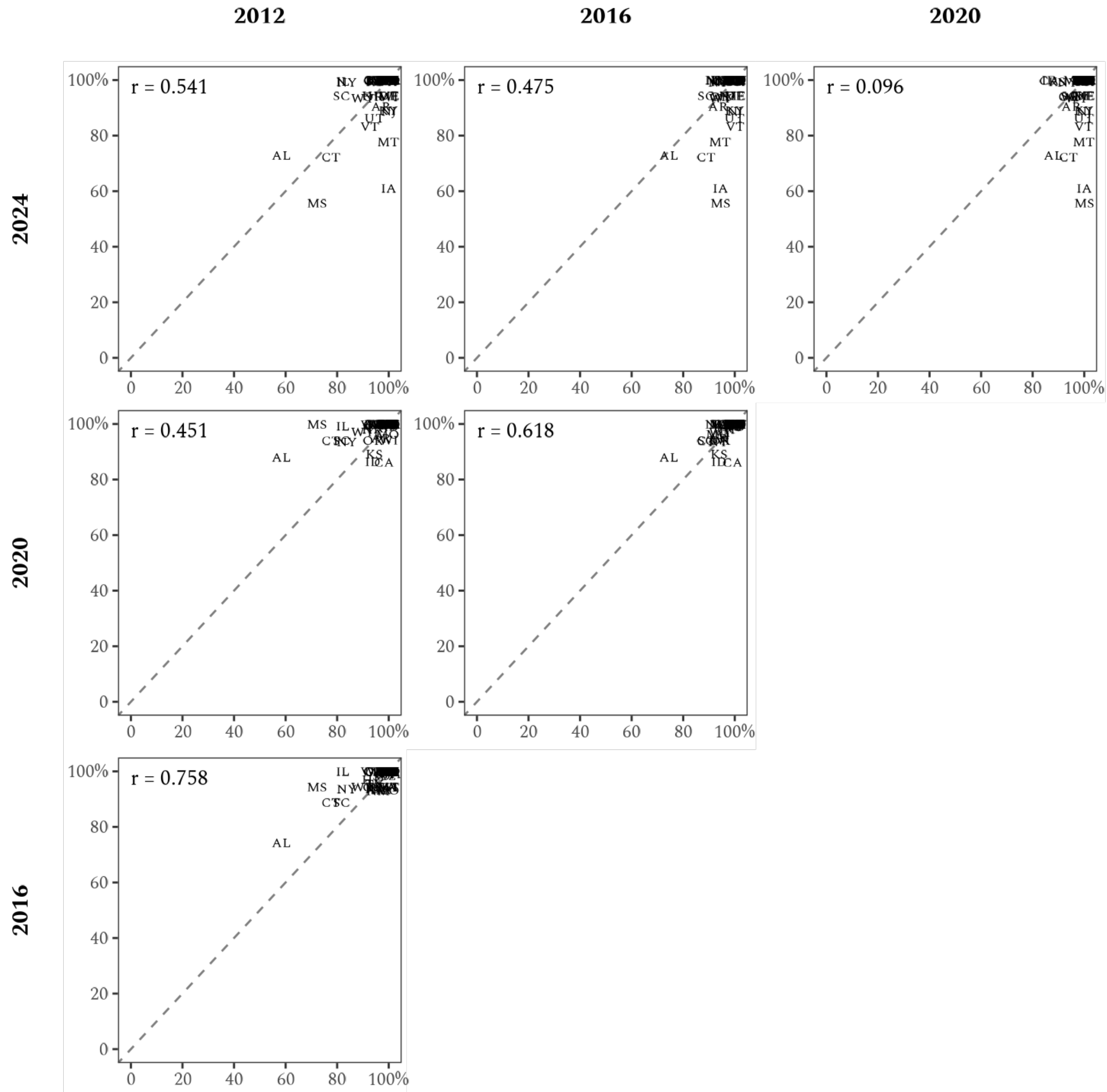
As illustrated by Figure 1, which plots completeness rates for all the states from 2008 to 2024, the mean completeness rate of the 18 EAVS items consistently rose from 2008 to 2014, from 86% in 2008 to 97% in 2014, and has remained around 97% since. The mean completeness of 95% in 2024 was slightly lower than previous years. The smaller vertical lines in Figure 2 indicate the completeness rate of a particular state and the larger, red lines indicate the mean across states.

The biggest jump in average completeness occurred between 2008 and 2010, when New

York went from reporting no data at the county level to reporting county-level statistics for about two-thirds of the items.

Figure 2 compares completeness rates across the six other election cycles covered by the EPI through the 2024 election. The dashed lines in the figure indicate where observations for the two years are equal.

Figure 2: Percent Completeness on Key EAVS Questions



Historically, the completeness rate of states has been moderately correlated with previous election years. The weak correlation observed between 2024 and 2020 is a result of completeness rates significantly dropping for a number of states as shown in Table 12. Namely, Mississippi and Iowa each had their completeness rates drop by around 40 percentage points due to fully missing numerous EAVS variables detailed in Table 13.

Table 12: States with Largest Changes in EAVS Completeness Rate (2020 vs. 2024)

State	2020 (%)	2024 (%)	Change (pp)
MS	100.0	55.8	-44.2
IA	100.0	61.0	-39.0
MT	100.0	77.8	-22.2
CT	94.0	72.3	-21.7
VT	99.8	83.3	-16.5
AL	88.0	72.9	-15.1
CA	86.3	99.9	+13.7
UT	100.0	86.3	-13.7
ID	86.5	100.0	+13.5
NJ	100.0	88.9	-11.1

Table 13: Fully Missing EAVS Items by State (2024 vs. 2020)

State	Fully missing items (2024 vs. 2020)
IA	Invalid/rejected registration applications; Domestic absentee ballots transmitted; Domestic absentee ballots returned; Domestic absentee ballots counted; Election Day in-person participation; Early voting participation; By-mail participation
MS	Invalid/rejected registration applications; By-mail ballots returned; Domestic absentee ballots counted; Domestic absentee ballots rejected; Early voting participation; By-mail participation; Total absentee ballots counted; Total absentee ballots rejected

5.2 Disability Access

5.2.1 *Data source*

Voting and Registration Supplement to the Current Population Survey

Access to voting for the physically disabled has been a public policy concern for years. The federal Voting Accessibility for the Elderly and Handicapped Act, passed in 1984, generally requires election jurisdictions to ensure that their polling places are accessible to disabled voters. The Voting Rights Act of 1965, as amended, and HAVA also contain provisions that pertain to ensuring that disabled Americans have access to voting. HAVA, in particular, established minimum standards for the presence of voting systems in each precinct that allow people with disabilities the same access as those without disabilities.

Earlier studies of the effectiveness of these laws and other attempts at accommodation were limited, often relying on small samples of voters or localities rather than comprehensive jurisdictional comparisons.[17] More recently, a series of reports commissioned by the U.S. Election Assistance Commission and conducted by researchers at Rutgers University has substantially expanded the evidence base. These studies, which draw on the same CPS data used in this indicator, confirm that a persistent turnout gap remains between voters with and without disabilities, though it has narrowed in recent cycles.[18] At the same time, voters with disabilities continue to face disproportionate difficulties: in 2022, 20% of voters with disabilities reported difficulty voting in person, compared to 6% of voters without disabilities.[19] As shown in Table 14, our own CPS data reflect this gap, and the gap increases with the number of disabilities reported (Table 15).

5.2.2 *Coding convention*

This indicator is based on responses to the Voting and Registration Supplement of the Current Population Survey, which is conducted by the U.S. Census Bureau. Specifically, it is based on the difference in turnout rates between people who reported having one of six disabilities and those who reported having none of these disabilities.

In 2008, the CPS began asking respondents if they had one of six disabilities. Table 14 lists those disabilities, along with the percentage of nonvoters in 2020 and 2024 who reported having them. The table also lists the percentage of people with the indicated disabilities who reported voting. For comparison, it also lists the reported turnout rates of those who reported none of these disabilities.

Table 14: Turnout Rates by Disability Type

Disability	% of eligible (2020)	Turnout (2020)	% of eligible (2024)	Turnout (2024)
Difficulty dressing or bathing	1.9%	59.3%	2.3%	57.2%
Deaf or serious difficulty hearing	4%	77.9%	4.2%	77.3%
Blind or difficulty seeing even with glasses	1.7%	69.3%	2%	67.8%
Difficulty doing errands	4.4%	61.6%	5%	59.2%
Difficulty walking or climbing stairs	7.1%	70.6%	7.6%	69.9%
Difficulty remembering or making decisions	4%	59.4%	4.9%	59%
At least one of the above disabilities	12.7%	71.5%	14.2%	69.5%
No disabilities reported	87.3%	80.3%	85.8%	77.2%

Previously, the EPI measured disability-related problems differently. That indicator was based on answers to the question put to all non-voters, “What was the main reason you did not vote?” See Section 4.2 of the 2020 EPI Methodology Report for a discussion of the previous indicator.[20]

The link between the former and current measurement strategy can be shown by examining the percentage of non-voting respondents who identified as having a disability and who also chose illness or disability as the reason for not voting. A nonvoter with any one of the disabilities was several times more likely to give the illness or disability answer compared with someone without any of these disabilities. Furthermore, the more disabilities a nonvoter listed, the more likely he or she was to give this response (Table 15).

Table 15: Percent of Disabled People Did Not Vote Because of a Disability or Illness, by Number of Disabilities

	0	1	2	3	4 or more
2020	8.3%	25.9%	37.9%	42.1%	54.2%
2024	7.5%	24.6%	38.8%	46.8%	57.7%

5.2.3 *Stability of rates across time*

The differential in turnout rates between people with and without disabilities will vary across time for a variety of reasons. On the one hand, some of these reasons may be related to policy; for instance, a statewide shift to all vote-by-mail balloting may lower the turnout gap, because the barriers to voting experienced by many people with disabilities have been lowered. On the other hand, some of these reasons may be unrelated to election administration or policy, and therefore can be considered random variation.

The VRS has included disability questions since 2008, enabling a reliability test across eight federal elections (2008, 2010, 2012, 2014, 2016, 2018, 2020, and 2024).

Table 16: Between-year correlation of disability/illness indicator

	2012	2014	2016	2018	2020	2022	2024
2012	1.000						
2014	0.209	1.000					
2016	0.279	0.285	1.000				
2018	0.360	0.210	0.352	1.000			
2020	-0.038	-0.133	0.255	0.338	1.000		
2022	0.281	0.335	0.227	0.289	0.092	1.000	
2024	0.056	0.210	0.201	0.249	0.266	0.198	1.000

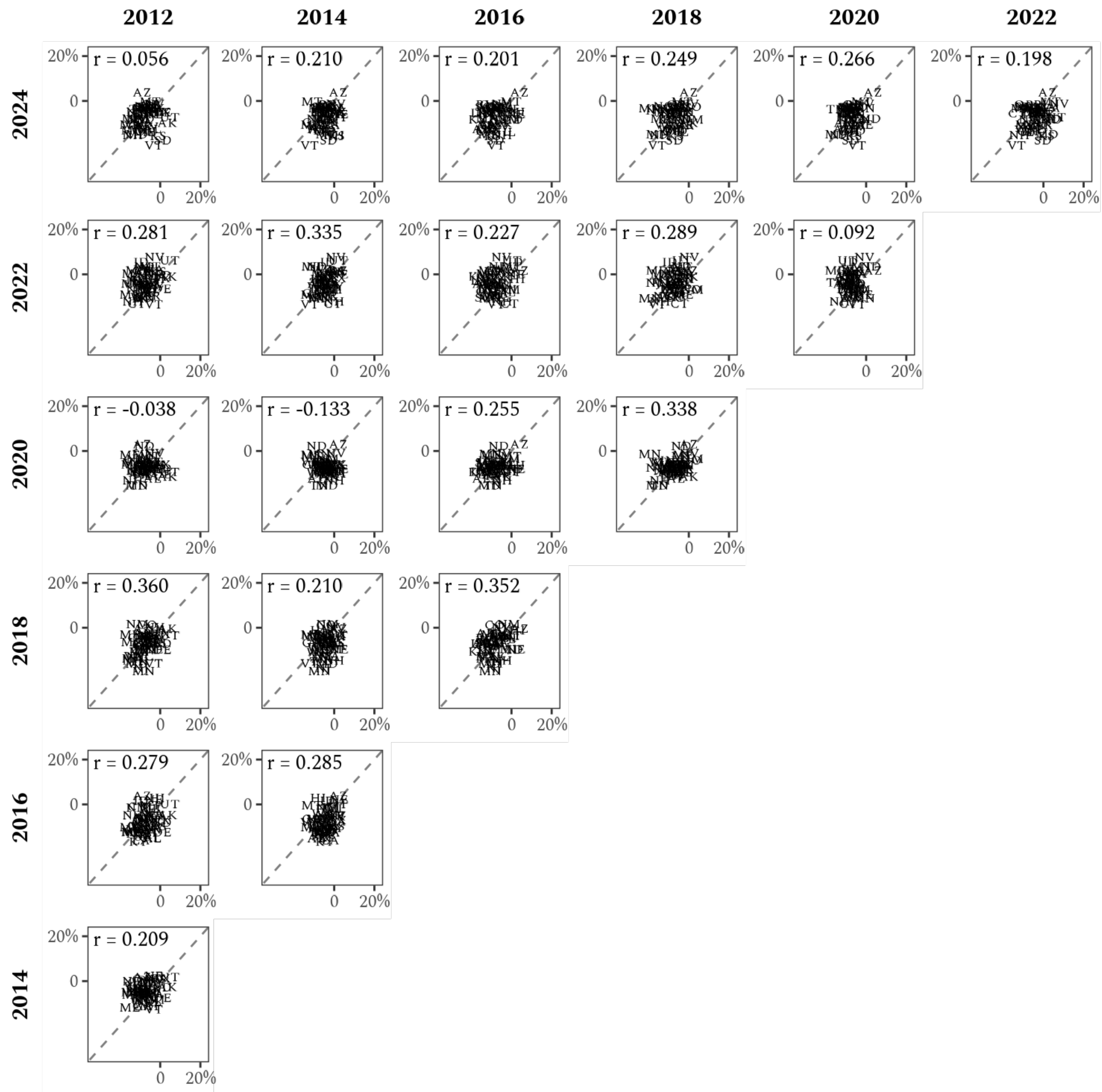
Table 16 is the correlation matrix reporting the Pearson correlation coefficients for values of this indicator across these eight elections. Excluding 2020, the correlation coefficients between pairs of elections are moderately high. The fact that the coefficients do not decay across the 16 years' worth of data suggests that the underlying factor being measured by this indicator is stable within individual states; therefore, there is strong reliability to the measure. As a result, it may be prudent to consider combining data across years so that the reliability of the measure can be improved.

While the previous disability indicator did not combine presidential and midterm years due to the fact that more nonvoters give the "illness or disability" reason in presidential election years than midterm years, the new indicator does not suffer from the discrepancies between elections. Consequently, a more prudent strategy is to treat federal elections together.

The indicator uses a rolling three-election average of statewide turnout differences: 2008–2012 for 2012, 2010–2014 for 2014, and so on.

Figure 3 shows the correlations across these three measures for each observable year of this indicator.

Figure 3: Difference in Turnout Rates Comparing People with and without Disabilities



5.3 ERIC Membership (2020-)

5.3.1 *Data source*

Electronic Registration Information Center (ERIC)

Historically, keeping registration rolls up-to-date has been challenging for states. As a result, a number of registration records are not accurate. To minimize the amount of deadwood (registrants who moved or died but remain on the registration list), six states—Colorado, Delaware, Nevada, Utah, Virginia, and Washington—joined Pew Charitable Trusts in 2012 to form the Election Registration Information Center, or ERIC.

ERIC pulls data from the Social Security Administration, the U.S. Postal Service, and from its members' Department of Motor Vehicles and compares these lists to the official registration lists in its member states. It then notifies states of voters who likely moved or died. In addition, it encourages its members to reach out to voters who moved into their state to register in the new state.

As of the 2024 Election, 24 states and the District of Columbia are members of ERIC. The index measure is based simply on a binary coding of whether a state is a member of ERIC. If the state is not a member of ERIC, their EPI score is calculated without the indicator (not affecting non-participants' EPI score). If a state is officially approved as an ERIC member before the election in question, the state gets coded appropriately. For the ten states which joined ERIC prior to 2017, the dates they joined were taken from the 2017 Final ERIC report. States which joined after 2017 were collected through the ERIC website. States were credited with being a member of ERIC if they were listed as a member on the website as of November 2024. Note that Hawaii enacted legislation in 2024 requiring the state to join ERIC, but was not technically a member as of the November 2024 election; a future EPI release will reflect Hawaii's membership. Table 17 displays each member of ERIC for each federal election since its inception.

Table 17: ERIC membership by election year

2012	CO, DE, MD, NV, UT, VA, WA
2014	CO, CT, DC, DE, LA, MD, MN, NV, OR, UT, VA, WA
2016	AK, AL, CO, CT, DC, DE, IL, LA, MD, MN, NM, NV, OH, OR, PA, RI, UT, VA, WA, WI, WV
2018	AK, AL, AZ, CO, CT, DC, DE, IA, IL, LA, MD, MN, NM, NV, OH, OR, PA, RI, SC, UT, VA, WA, WI, WV
2020	AK, AL, AZ, CO, CT, DC, DE, FL, GA, IA, KY, LA, MD, MI, MN, MO, NM, NV, OH, OR, PA, RI, SC, TX, UT, VA, VT, WA, WI, WV

2022	AK, AL, AZ, CO, CT, DC, DE, FL, GA, IA, IL, KY, MA, MD, ME, MI, MN, MO, NJ, NM, NV, OH, OR, PA, RI, SC, TX, UT, VA, VT, WA, WI, WV
2024	AK, AZ, CO, CT, DC, DE, GA, IL, KY, MA, MD, ME, MI, MN, NJ, NM, NV, OR, PA, RI, SC, UT, VT, WA, WI

5.4 Mail ballots rejected

5.4.1 *Data source*

Election Administration and Voting Survey

The use of mail ballots has grown significantly over the past two decades as states have expanded the conditions under which absentee voting is allowed. However, not all mail ballots returned for counting are accepted for counting. Mail ballots may be rejected for a variety of reasons. In 2024, as in 2020, the most common reasons for the rejection of absentee ballots were related to signatures — either signatures on the return envelope not matching the signature on file (40.7%) or no signature at all (10%). Another 17.8% were rejected because the ballot was not received on time.[21]

5.4.2 *Coding Convention*

Expressed as an equation, the mail ballot rejection rate can be calculated as follows from the EAVS datasets:

$$\text{Mail ballot rejection rate} = \frac{\text{Domestic absentee ballots rejected}}{\text{Total participants}}$$

Table 18: EAVS variables used to calculate mail ballots rejected indicator

Descriptive name	**2008 EAVS**	**2010-2016 EAVS**	**2018-2020 EAVS**	**2022 EAVS**	**2024 EAVS**
Domestic absentee ballots rejected	c4b	qc4b	C4a	C9a	C9a
Total participants	f1a	qf1a	F1a	F1a	F1a

The decision was made to use total participants in the general election as the denominator, rather than number of mail ballots returned, for two reasons. First, states that receive large numbers of returned mail ballots, measured as a percentage of all votes cast in an election, tend to have established administrative infrastructure for processing them and often accept a large share of those ballots. Thus, the percentage of mail ballots rejected as a percentage of mail ballots returned measures largely the scale and maturity of a state's mail voting program and does little beyond that to illustrate the health of elections in a state. Second, the number of mail ballots rejected represents voters who attempted to vote by mail and had their ballot discarded. Large numbers of such voters relative to the number of total participants in the election represent not only lost opportunities by voters to have their ballots counted, but also greater opportunities for disputes about an election's results. In other words, a large number of mail ballots left uncounted for whatever reason, as a share of total participants, indicates a mix of administrative problems and the potential for litigation, neither of which can be considered positive.

Table 19 reports states with missing values for this indicator from 2008 to 2024. No states for which this indicator is included were missing it for 2024. Oregon is included in this indicator, using data provided by the state that describes its vote-by-mail system. Washington, Colorado, and Hawaii are similarly included using data from their vote-by-mail systems that started in 2010, 2016, and 2020 respectively.

With the onset of the COVID-19 pandemic, voting by mail became the most common way of voting during the 2020 election. Many states, including California, Nevada, and New Jersey (and non-states like the District of Columbia), automatically sent voters mail-in ballots, and a handful of states, such as New Mexico and Nebraska, sent mail-in ballot application forms to all voters.

Table 19: States with too much missing data to calculate mail ballots rejected indicator

Year	State
2008	AL, AR, IL, IN, MS, NY, SD, WV
2010	AL, MA, MS, NM, NY
2012	AL, MS, NY, VT, WV
2014	AL, UT
2016	AL, NM, WI
2018	OR
2020	AL, KS
2022	AL, ID, IL
2024	No states with missing data

5.4.3 *Comparisons over time*

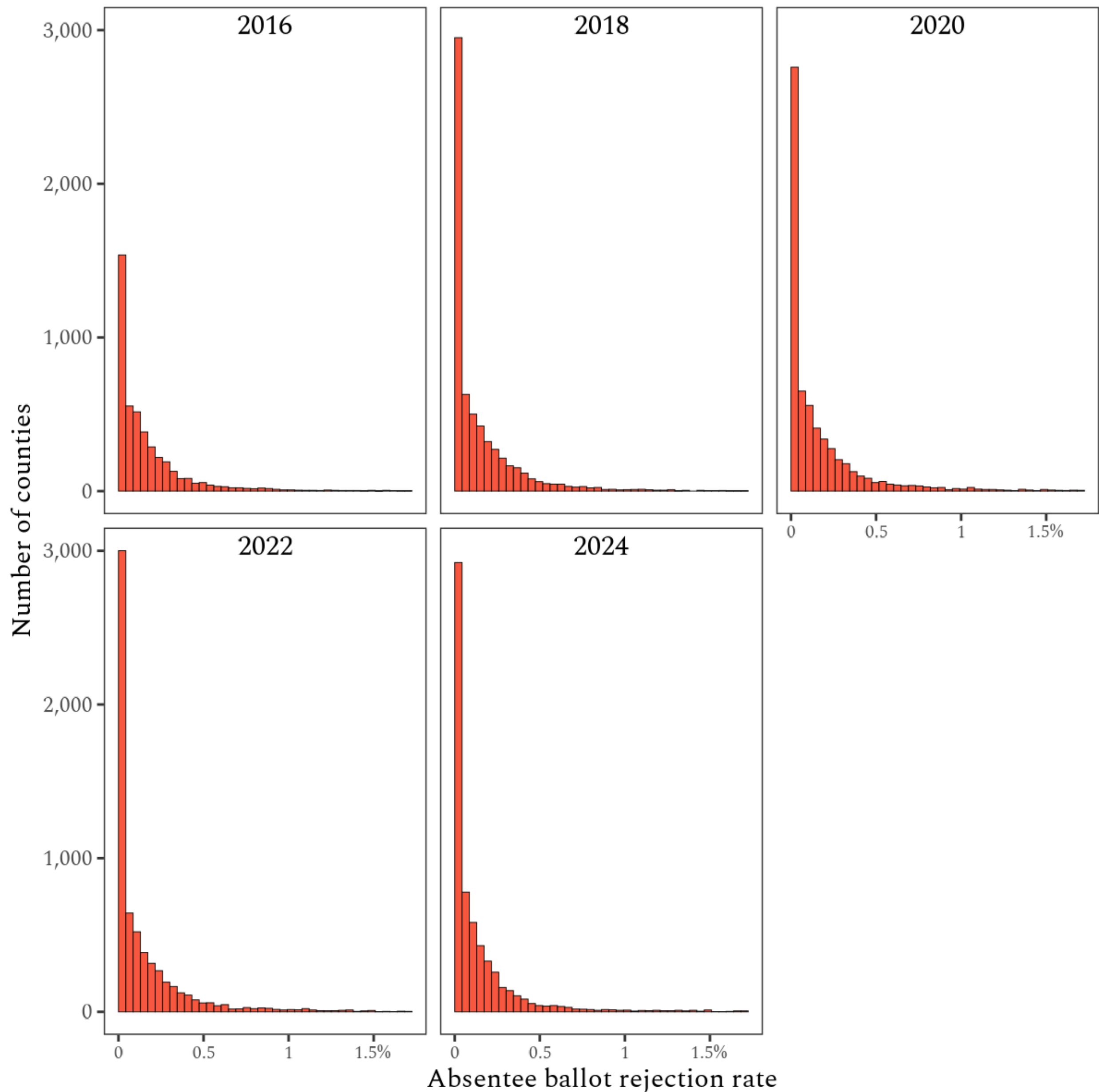
We begin by comparing domestic mail ballot rejection rates, measured at the county level, for 2016, 2018, 2020, 2022, and 2024. The raw data exhibit what is known as a pronounced "right skew"; that is, most counties have very low rejection rates, while a few have relatively high rates. This is illustrated in Figure 4: histograms that show the distribution of rejection rates for each county for which we have the relevant data. Because of this pronounced right skew, any scatterplot that compares values across years will be misleading — the bulk of observations will be clumped around the origin, with our eye drawn toward the small number of outliers with extremely large values. To deal with this pronounced right skew, it is common to transform the measures by taking logarithms. One problem this creates is that a large fraction of counties had zero domestic mail ballots rejected, and the logarithm of zero is undefined. Therefore, in the scatterplot in Figure 5, counties with zero rejected ballots have been set to 0.000001, which is slightly below the smallest nonzero usage rate that was actually observed. Finally, so that the influence of larger counties is visually greater than that of smaller counties, we weight the data tokens in proportion to the size of the county.

As Figure 5 illustrates, for counties that reported the necessary data, the rejected rates were similar when they are compared across previous presidential years, with Pearson correlation coefficients ranging from .390 to .520.[22] For 2024, the Pearson correlation coefficients, which measure the degree of similarity between election cycles, are similar to previous years, ranging from 0.418 to 0.613.

The figure also illustrates how counties that report no rejected domestic mail ballots in one election cycle often report a considerably greater rejection rate in the next cycle. Sometimes this is because the county is very small. With domestic mail ballot rejection rates overall being relatively low (ranging from 0.2 to 0.4% of all ballots cast), a county with only a few hundred voters might experience an election cycle in which no domestic mail ballots were rejected. However, relatively large counties will sometimes report zero mail ballots in one election cycle and a relatively large number in the next. This sort of pattern calls for further investigation and research. Until then, this pat-

tern alerts us to the need to be cautious when using data about the rejection of mail ballots.

Figure 4: Domestic Mail Ballot Rejection Rates by County



The EPI reports mail ballot rejection rates at the state level. The statewide rejection rates are similarly right-skewed; therefore, it is necessary to translate the rejection rates into logarithms before plotting the rejection rates across years. As with the measure calculated at the county level, the indicator calculated at the state level is stable across years, as seen in Figure 6.

Particularly notable in 2020, absentee ballot rejection rates nationwide went down a very small amount from 2018, despite the dramatic increase in voting by mail due to

the pandemic. However, some states did see increases in rejection rates. New Mexico, New Jersey, and Colorado had the highest rejection rates in 2020 at 1.83%, 1.11%, and 0.89% respectively. In 2024, the highest rates were in Oregon (1.69%), Utah (1.62%), and Colorado (1.32%). The average rejection rate across states was 0.34% in both 2020 and 2024.

Figure 5: Logged Domestic Mail Ballot Rejection Rates by County

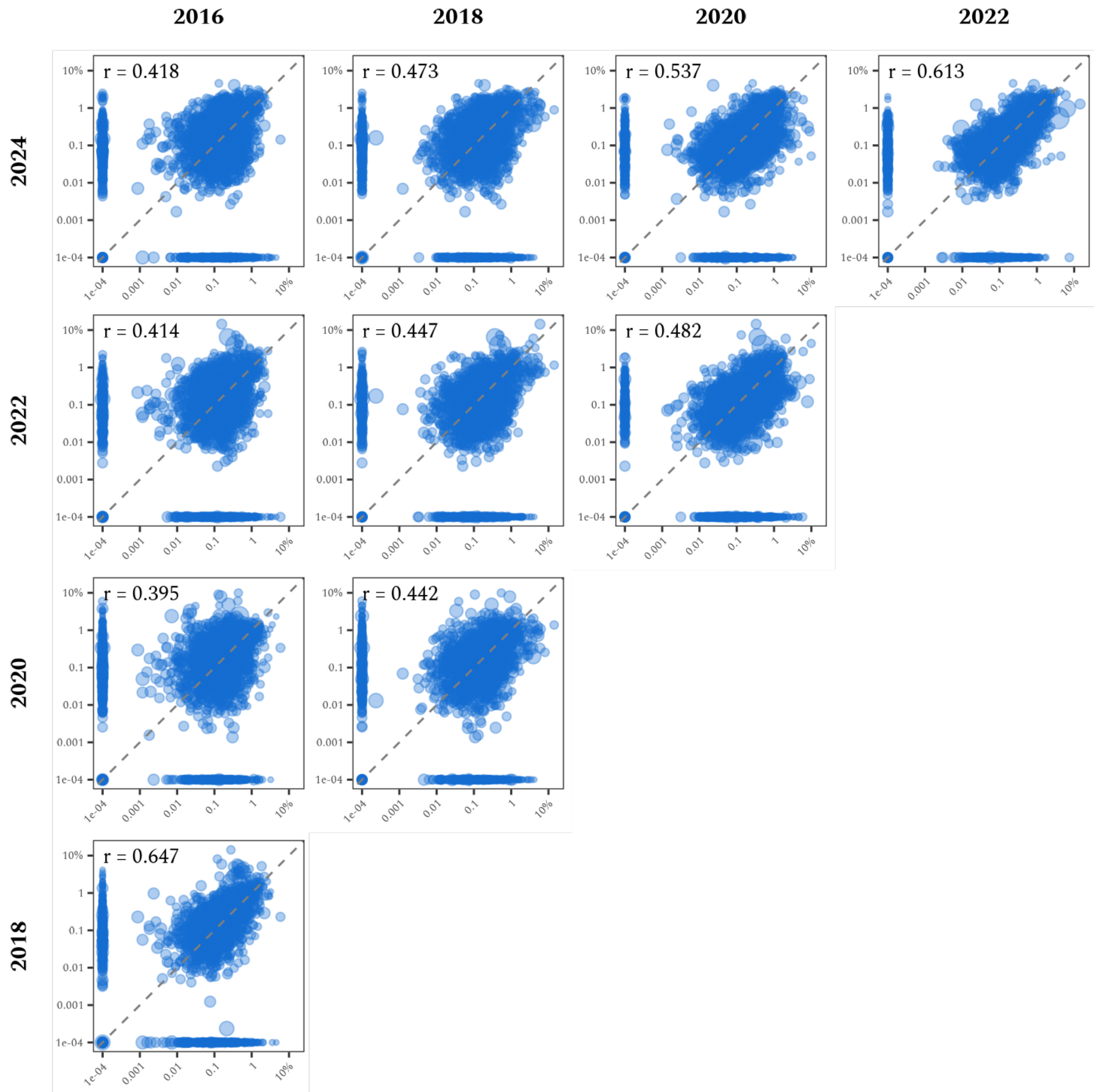
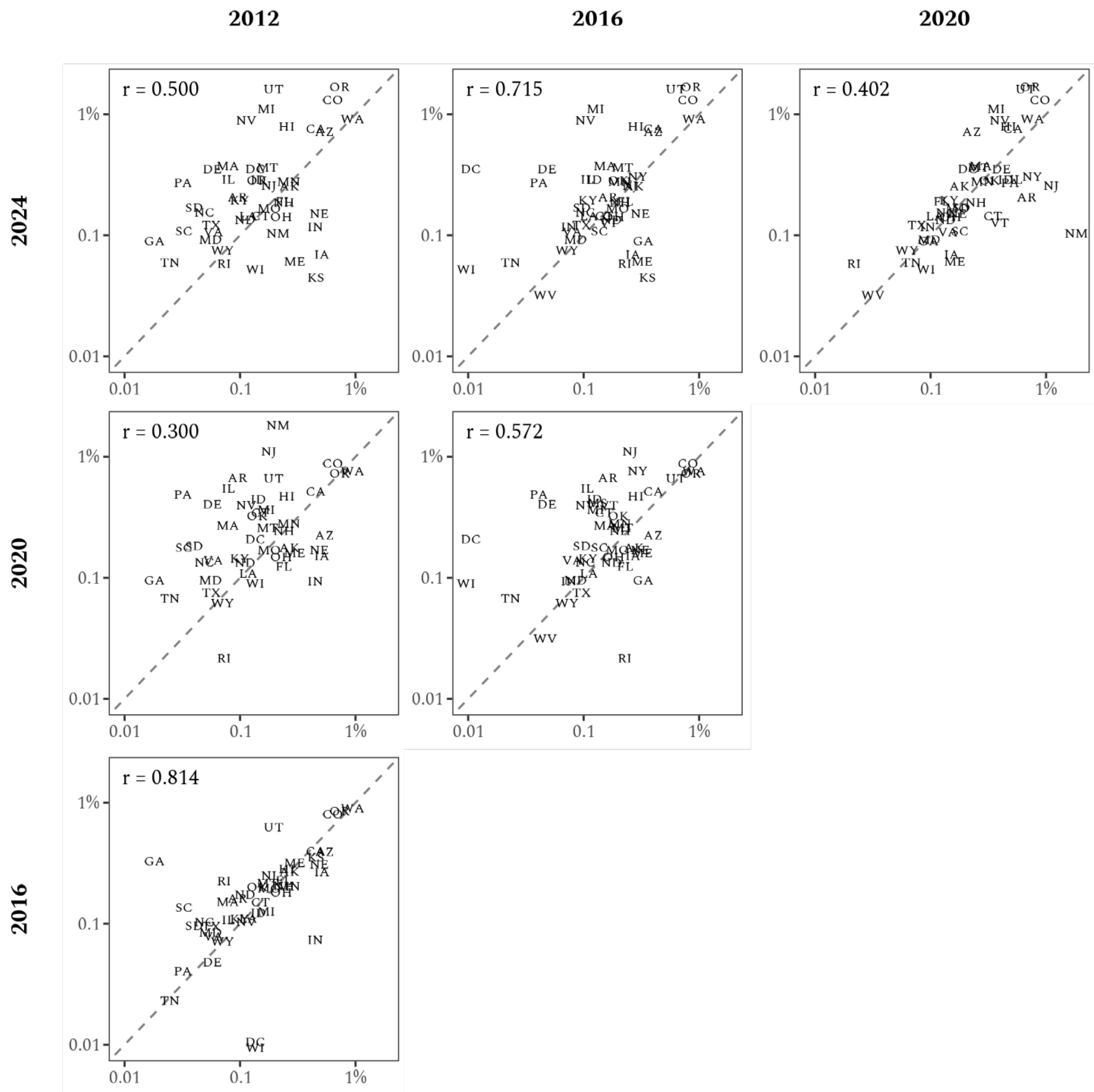


Figure 6: Logged Domestic Mail Ballot Rejection Rates by State



5.5 Mail ballots unreturned

5.5.1 *Data Source*

Election Administration and Voting Survey

Although use of mail ballots has grown as states have loosened the conditions under which votes may be cast by mail, not all mail ballots that are sent to voters are returned to be counted. In states that maintain permanent absentee lists, which allow voters to receive mail ballots automatically for all future elections, some of this reflects voter indifference to particular elections—some who request a ballot ultimately vote in person[23] or not at all. More concerning, mail ballots lack chain-of-custody documentation in transit, so some returned ballots may be lost.[24]

5.5.2 *Coding convention*

Expressed as an equation, the domestic mail ballot non-return rate can be calculated as follows from the EAVS datasets:

$$\text{Mail ballot non-return rate} = 1 - \frac{\text{Total domestic absentee ballots returned}}{\text{Total domestic absentee ballots transmitted}}$$

Table 20: EAVS variables used to calculate mail ballots not returned indicator

Descriptive name	**2008 EAVS**	**2010-2016 EAVS**	**2018-2020 EAVS**	**2022 EAVS**	**2024 EAVS**
Returned domestic absentee ballots	c1b	qc1b	C1b	C1b	C1b
Domestic absentee ballots transmitted	c1a	qc1a	C1a	C1a	C1a

Data will be missing if a county has failed to provide any of the variables, detailed in Table 20, included in the calculation. There were no states where it was impossible to compute domestic mail ballot non-return rates in 2016 and 2018 due to missing data. In 2024, four states (Alabama, Connecticut, Mississippi, and Nevada) did not report enough data to calculate the indicator. Table 21 reports states with missing values for this indicator from 2008 to 2020. In 2018, states with over 50% vote-by-mail were excluded from this indicator. In 2020, this was updated to only exclude states that conduct an election using a vote-by-mail system.

5.5.3 *Comparisons over time*

We begin by comparing domestic mail ballot non-return rates, measured at the county level, for 2016, 2018, 2020, 2022, and 2024. The raw data exhibit a pronounced "right skew";

that is, most counties have very low non-return rates, while a few have relatively high rates. This is illustrated in Figure 7: histograms that show the distribution of non-return rates for 2016, 2018, 2020, 2022, and 2024 for each county for which we have the relevant data.

Table 21: States with too much missing data to calculate mail ballots not returned indicator

Year	State
2008	AL, AR, CT, MN, MS, NM, NY, TN, WV
2010	AL, IN, MS, NY, SD
2012	AL, KS, MS, NY, WV
2014	AL, UT
2016	No states with missing data
2018	No states with missing data
2020	AL, NJ, NV, RI
2022	IL, NV
2024	AL, CT, MS, NV

Because of this right skew, any scatterplot that compares values across years will be misleading in that the bulk of observations will be clumped around the origin, with our eye drawn toward the small number of outliers with extremely large values. To deal with this right skew, it is common to transform the measures by taking logarithms. One problem this creates is that a large fraction of counties had zero domestic absentee ballots rejected, and the logarithm of zero is undefined. Therefore, in the scatterplot in Figure 8, counties with zero rejected ballots have been set to 0.00001, which is slightly below the smallest nonzero rate that was actually observed.

Finally, so that the influence of larger counties is visually greater than that of smaller counties, we weight the data tokens in proportion to the size of the county. As Figure 8 illustrates, for counties that reported the necessary data, the non-return rates are similar when they are compared across years. The Pearson correlation coefficients, which measure the degree of similarity across these two election cycles, ranges between 0.296 and 0.536.

These graphs also illustrate how counties that report no unreturned domestic absentee ballots in one election cycle sometimes report a considerably greater non-return rate in the next cycle. Non-return rates are relatively high when we combine data nationwide: 10.2% in 2008, 22.7% in 2010, 10.4% in 2012, 35.1% in 2014, 19.7% in 2016, 15.7% in 2018, 22.2% in 2020, 25.6% in 2022, and 16.9% in 2024. Therefore, it is unusual for a county to report precisely zero unreturned absentee ballots. Indeed, most counties reporting zero unreturned absentee ballots are very small, with very low numbers of absentee ballots sent out in the first place.[25] As with the measure calculated at the county level, the indicator calculated at the state level is stable across years before 2024, as seen in Figure 9.

Figure 7: Domestic Mail Ballot Non-return Rates by County

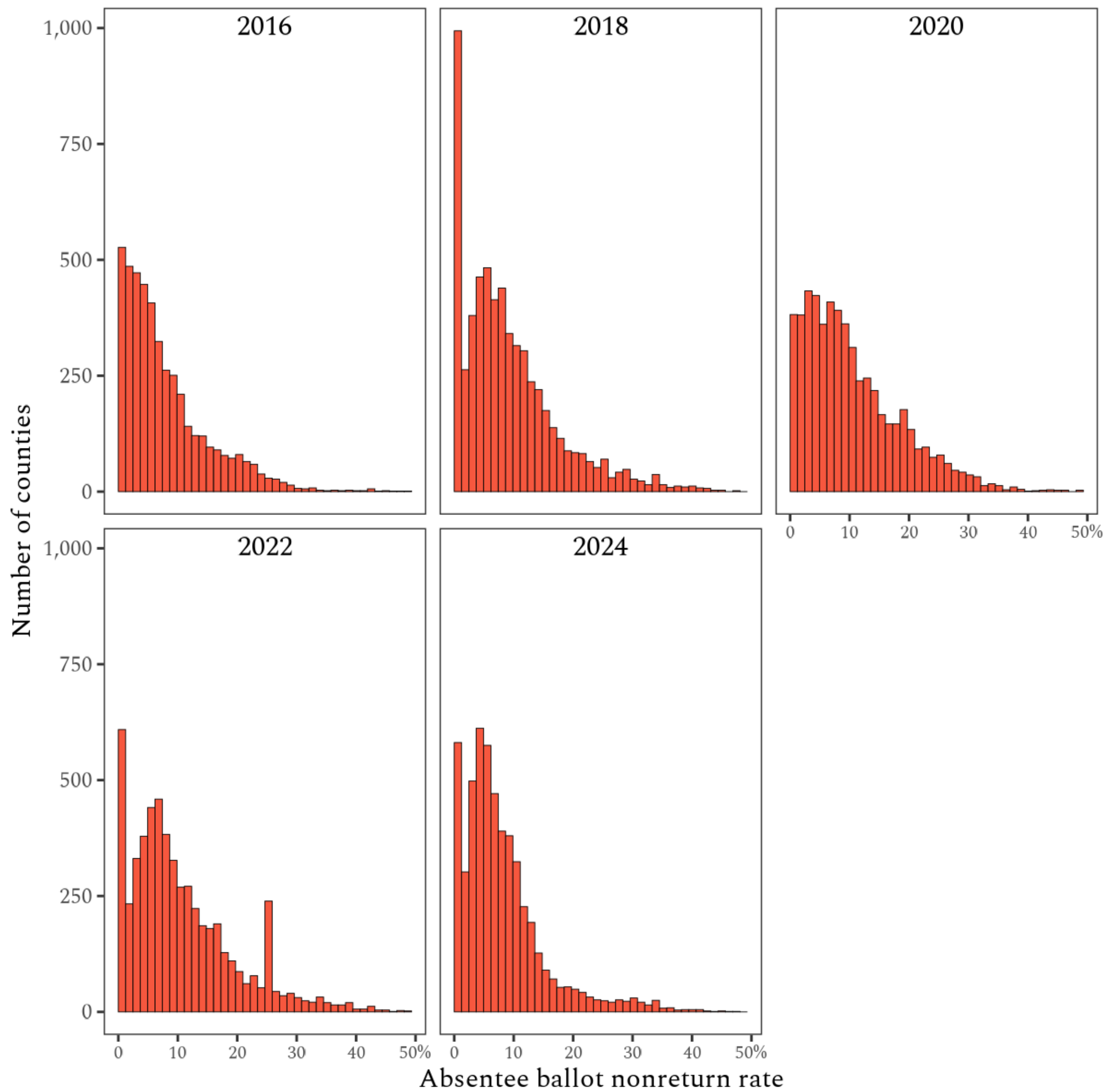


Figure 8: Logged Domestic Mail Ballot Non-return Rates by County

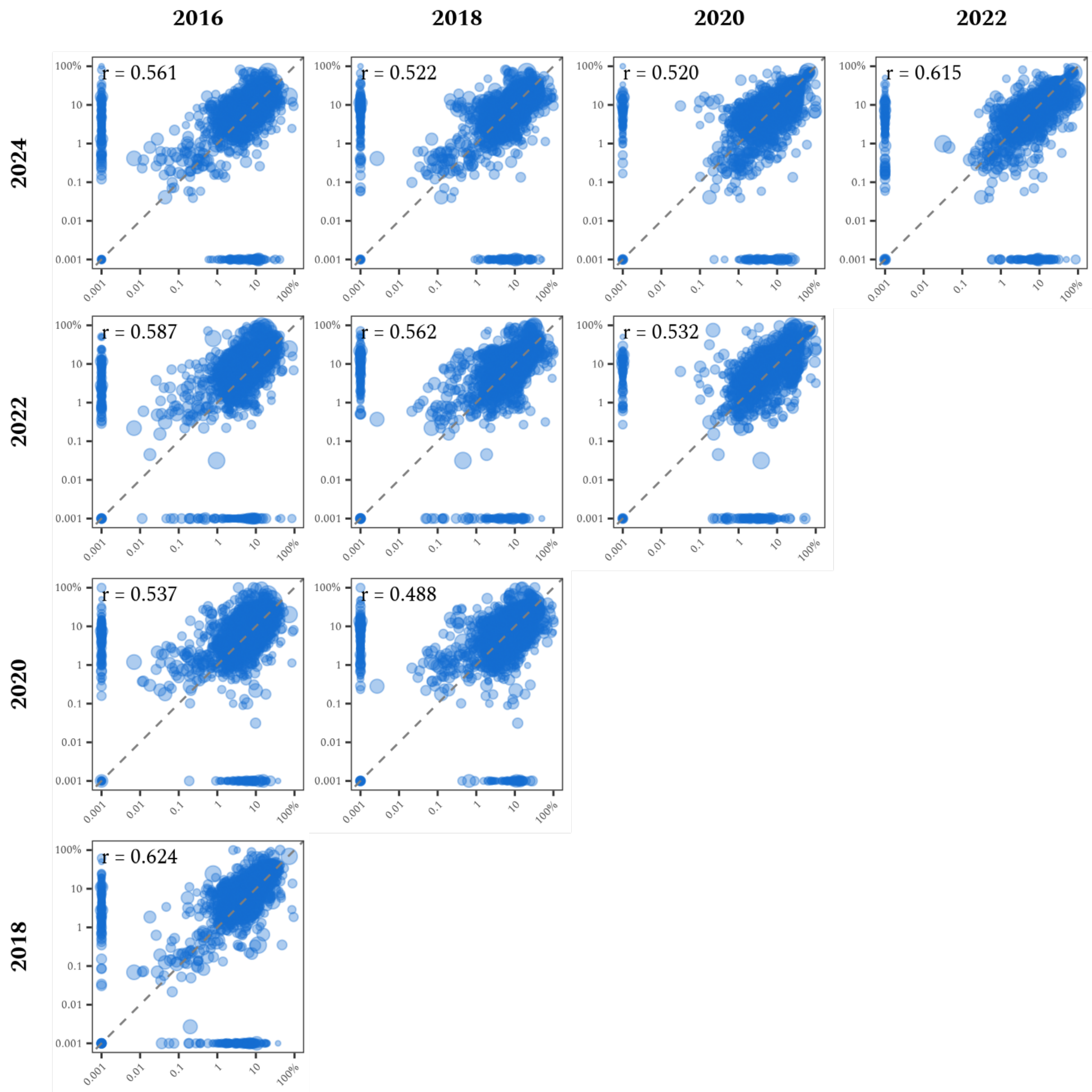
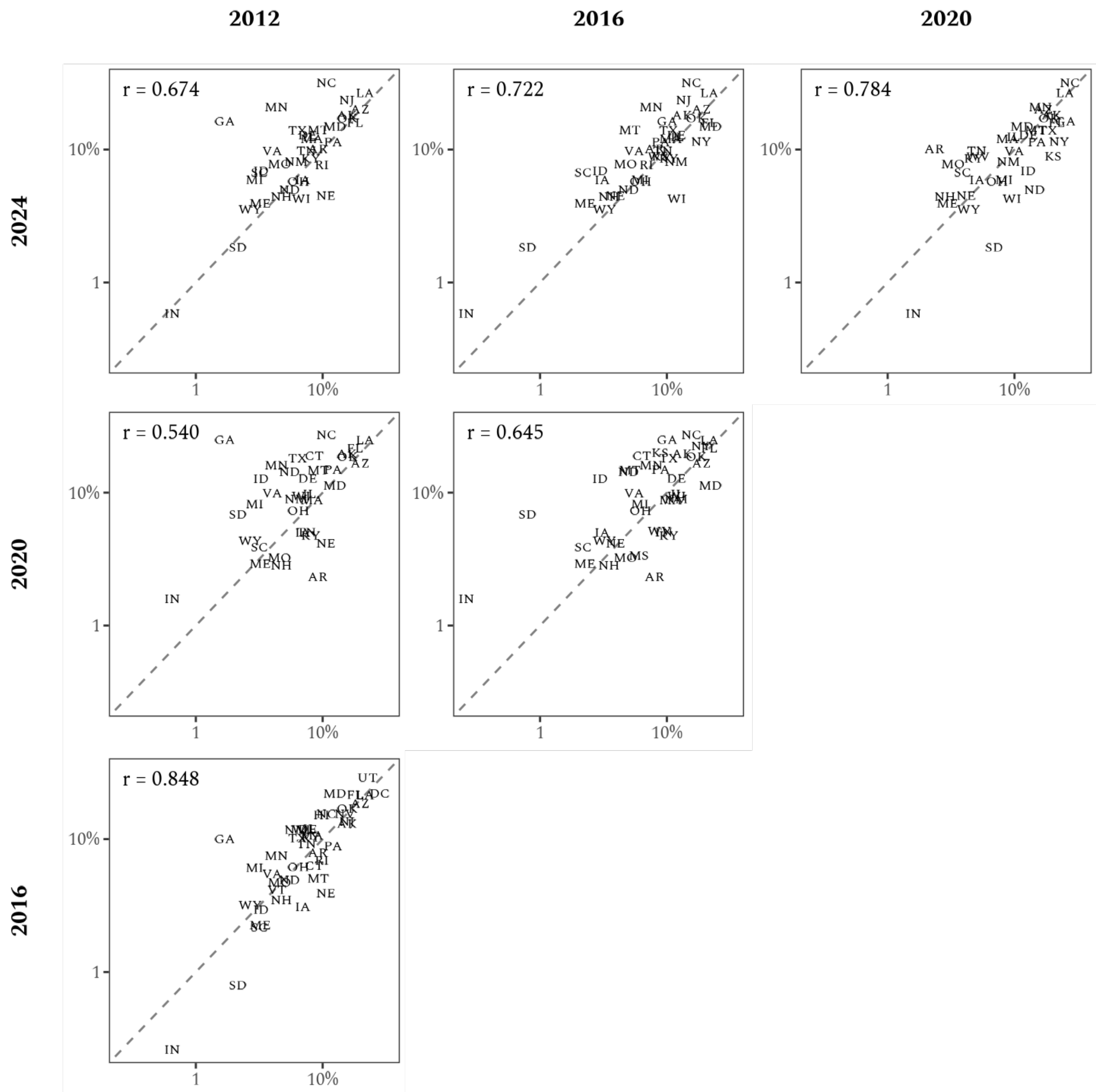


Figure 9: Logged Domestic Mail Ballot Non-return Rates by State



5.6 Military and overseas ballots rejected

5.6.1 *Data source*

Election Administration and Voting Survey

Military and overseas (UOCAVA) voters face significant obstacles to participating in federal elections. We measure these obstacles through the fraction of returned ballots that are rejected.

By far, the principal reason ballots sent to UOCAVA voters are rejected is that the ballots are received by election officials after the deadline for counting. Despite the passage of the MOVE Act, the percentage of UOCAVA ballots rejected because they missed the deadline has not obviously declined. Within the period covered by the EPI, the share of rejected ballots attributable to missing the deadline has been 43.7% (2008), 32.4% (2010), 40.4% (2012), 48.9% (2014), 44.4% (2016), 52.7% (2018), 43.0% (2020), 64.8% (2022), and 48.1% (2024).[26]

However, reporting about why UOCAVA ballots are rejected is lacking. The percentage of rejected UOCAVA ballots that were accounted for by an undefined and undifferentiated other category was 31.2% in 2008, 49.0% in 2010, and 25.4% in 2012. The percentage of rejected ballots not categorized at all was 12.2% in 2008, 11.4% in 2010, and 18.4% in 2012. Beginning in 2016, the EAVS restructured the UOCAVA rejection reason question to require states to report ballots as rejected for one of four specific reasons: missed deadline, signature issue, postmark issue, or other. As a result, the share of ballots with no categorization has declined substantially in recent years. However, the "other′′ category continues to account for a substantial share of rejected UOCAVA ballots: 23.1% in 2018, 39.3% in 2020, 16.4% in 2022, and 34.2% in 2024. The actual share of UOCAVA ballots rejected for lateness is likely higher than the EAVS reports.

5.6.2 *Coding convention*

Expressed as an equation, the UOCAVA absentee ballot rejection rate can be calculated as follows from the EAVS datasets:

$$\text{UOCAVA absentee ballot rejection rate} = \frac{\text{UOCAVA absentee ballots rejected}}{\text{UOCAVA ballots submitted for counting}}$$

Table 22: EAVS variables used to calculate UOCAVA ballots rejected indicator

Descriptive name	**2008 EAVS**	**2010-2016 EAVS**	**2018-2020 EAVS**	**2022 EAVS**	**2024 EAVS**
UOCAVA ballots rejected	b13	qb13a	B18a	B18a	B24a
UOCAVA ballots returned	b2	qb2a	B9a	B9a	B11a

Data will be missing if a county has failed to provide any of the variables, detailed in Table 22, included in the calculation. Because of missing data, it was not possible to compute UOCAVA ballot rejection rates in 6 states in 2024, detailed in Table 23.

Despite this, 2024 saw a marked decline in the number of UOCAVA ballots rejected compared to previous years. While values ranged from 4.4% to 6.6% in the years 2008–2018, the rate dropped to 1.6% in 2020 and has remained lower since, at 3.4% in 2022 and 2.7% in 2024. Post-2020 research by FVAP suggests that the sharp decline in 2020 may have been related to ballot timing rather than simply to increased participation by domestic mail ballots. Using transactional EAVS Section B data, FVAP found that UOCAVA ballots were returned earlier in 2020 than in 2016 or 2018, and that ballots requested before the 45-day deadline had higher return rates than those requested closer to Election Day; this pattern is consistent with fewer ballots being rejected for arriving late.[27] FVAP's 2024 report further notes that UOCAVA voters requested and returned ballots closer to Election Day in 2024 than in 2020, underscoring that 2020 may have been unusual in this respect.[28]

Table 23: States with too much missing data to calculate UOCAVA ballots rejected indicator

Year	State
2008	AL, AR, CT, DC, HI, IN, KY, MS, NY, OR, RI, SD, WV, WY
2010	MS, SD, VT, WV
2012	AL, HI, IL, MS, SC
2014	AL, AR, IL, UT
2016	AR, NM
2018	AR, IL, MS, RI
2020	AR, ID, NY
2022	IL
2024	AL, AR, CT, IA, KY, MS

5.6.3 *Comparisons over time*

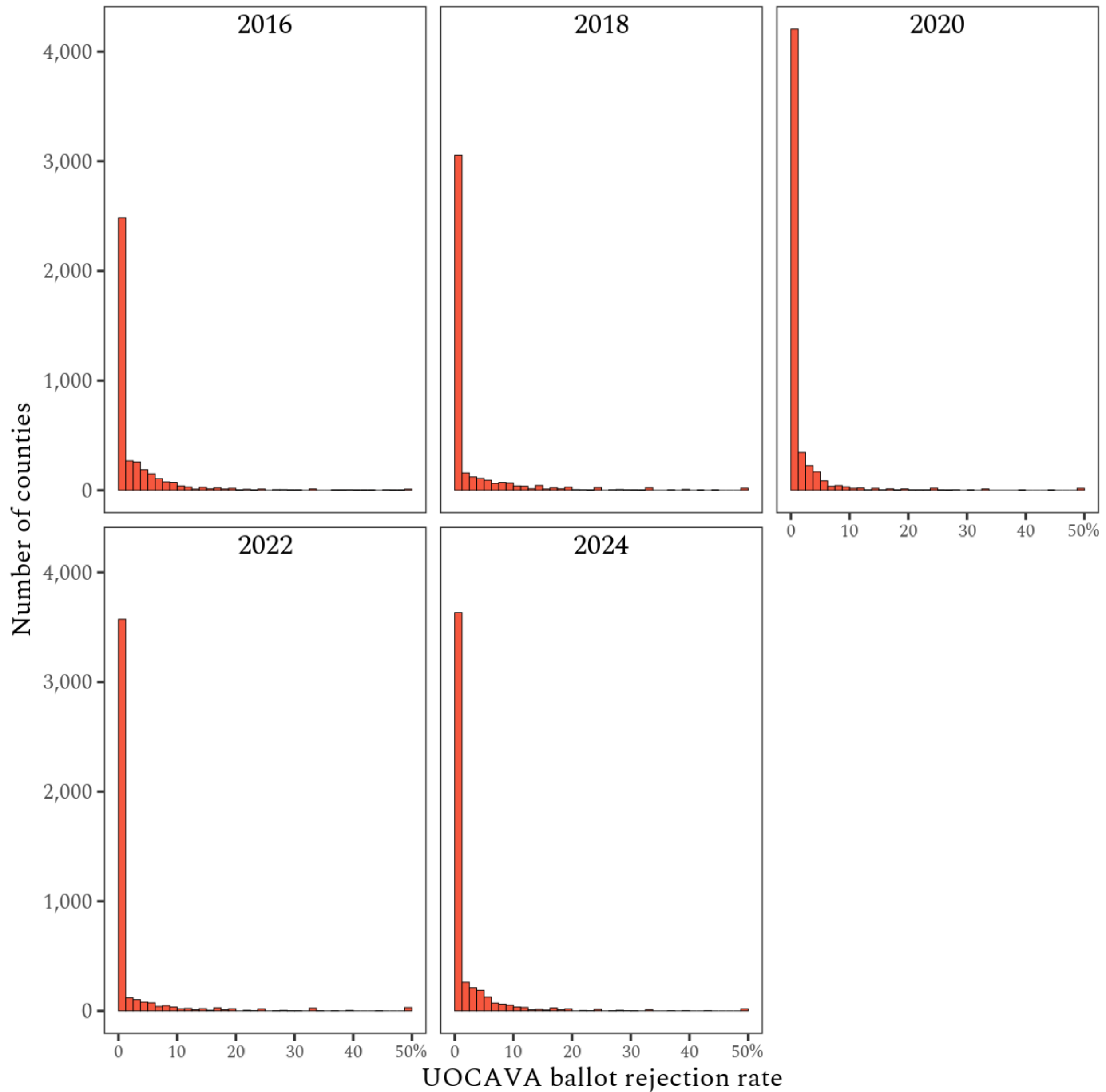
We begin by comparing UOCAVA ballot rejection rates, measured at the county level, for 2016, 2018, 2020, 2022, and 2024. The raw data exhibit what is known as a pronounced "right skew"; that is, most counties have very low rejection rates, while a few have relatively high rates. This is illustrated in Figure 10: histograms that show the distribution of rejection rates for each county for which we have the relevant data.

Because of this pronounced right skew, any scatterplot that compares values across years will be misleading in that the bulk of observations will be clumped around the origin, with our eye drawn toward the small number of outliers with extremely large values. To deal with this pronounced right skew, it is common to transform the measures by taking logarithms. One problem this creates is that a large fraction of counties had zero domestic mail ballots rejected, and the logarithm of zero is undefined. Therefore, in the scatterplot in Figure 11, counties with zero rejected ballots have been set to 0.0001, which is slightly below the smallest nonzero rejection rate that was actually observed. Finally, so that the

influence of larger counties is visually greater than that of smaller counties, we weight the data tokens in proportion to the size of the county.

As Figure 11 illustrates, for counties that reported the data necessary to calculate rejection rates, rates are weakly correlated across years. The Pearson correlation coefficient, which measures the degree of similarity across these two election cycles, ranges between 0.020 and 0.340.[29]

Figure 10: UOCAVA Ballot Rejection Rates by County



The relatively weak correlation in this measure across years is likely explained by several factors. A major issue is the evolving nature of laws related to UOCAVA ballots. The Mil-

itary and Overseas Voter Empowerment (MOVE) Act of 2009, which requires election officials to transmit requested UOCAVA ballots at least 45 days before a federal election, was implemented in time for the 2010 general election, but several states were given waivers for that election. Further, difficulties in meeting the demands of the act were reported in many states that had not been given waivers. By 2012, the MOVE Act was fully implemented, and the county-level correlations in rejection rates from 2010 to 2014 were still relatively low. More recent FVAP research suggests that this weak interyear relationship is not simply a legacy of unsettled MOVE Act implementation. Using transactional EAVS Section B data, FVAP has shown that UOCAVA rejection rates remain highly sensitive to when voters request and return their ballots: ballots requested before the 45-day deadline have lower rejection rates than those requested closer to Election Day, and 2020 appears to have been an unusually early-return election compared to 2018, 2022, and 2024.[30] At the same time, post-2020 data-standardization work also provides evidence that measurement differences remain important. States and localities collect UOCAVA information using different systems and naming conventions; rejected-ballot items align less well between ESB and EAVS than the core transmitted, returned, and counted items; and some missing fields cannot be readily distinguished from cases where data were not tracked or where an item did not apply.[31] Taken together, the low county-level correlations likely reflect both real changes in ballot timing and return behavior across elections and persistent heterogeneity in local reporting systems, rather than only the early implementation of the MOVE Act.

The EPI reports UOCAVA ballot rejection rates at the state level. The statewide rejection rates are slightly right-skewed; therefore, it is necessary to translate the rejection rates into logarithms before plotting the rejection rates across years. As with the measure calculated at the county level, the indicator calculated at the state level is stable across years.

The UOCAVA rejection rate measure exhibits a relatively low interyear correlation at the state level, much as it does at the local level. The Pearson correlation coefficient describing the relationship between 2008 and 2010 was a moderate 0.66 (not pictured here), but the other interyear correlations are much lower. As noted above, we suspect that these low to moderate interyear correlations are due to a combination of unsettled law and unsettled record keeping.

Figure 11: Logged UOCAVA Ballot Rejection Rates by County

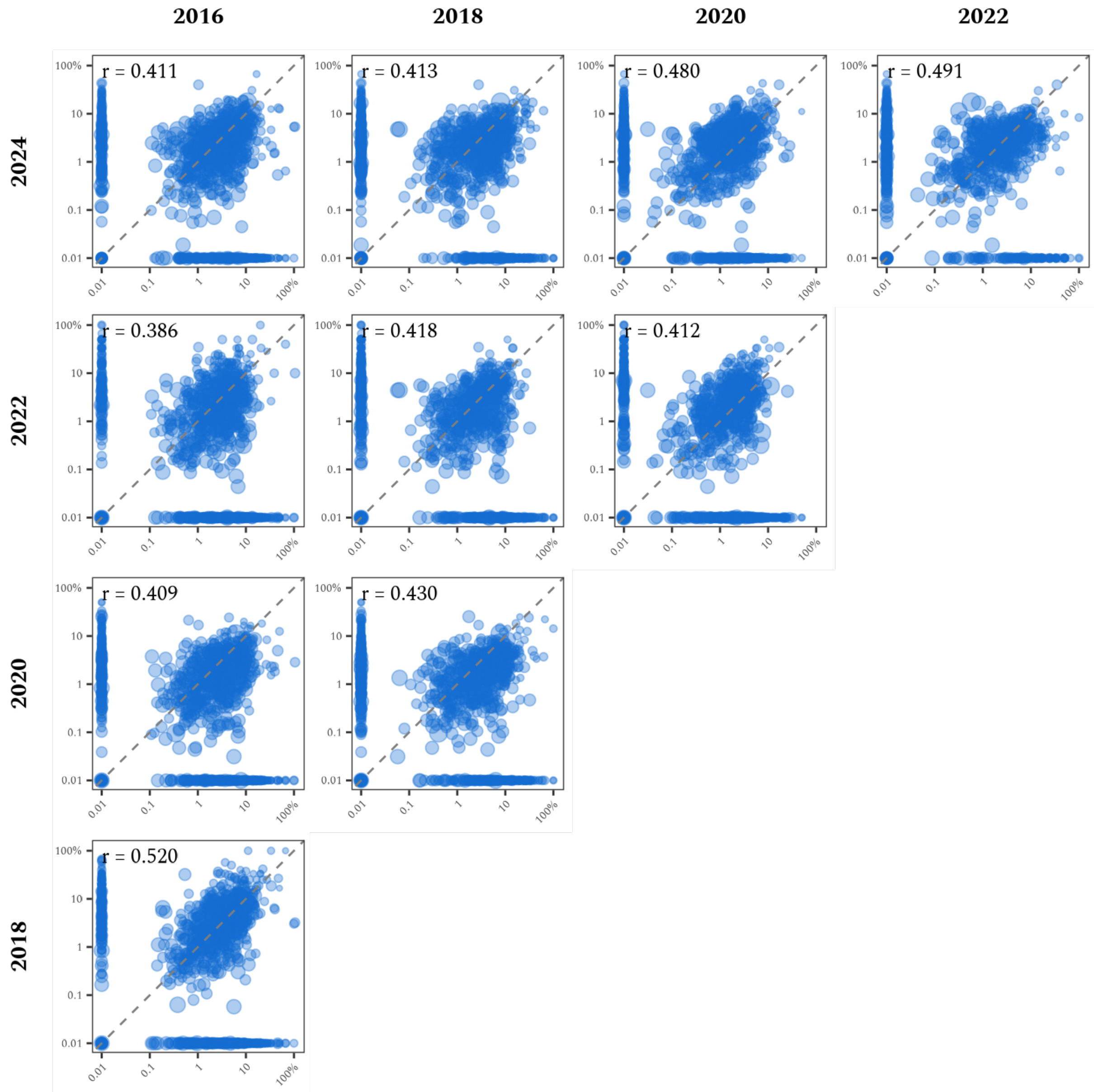
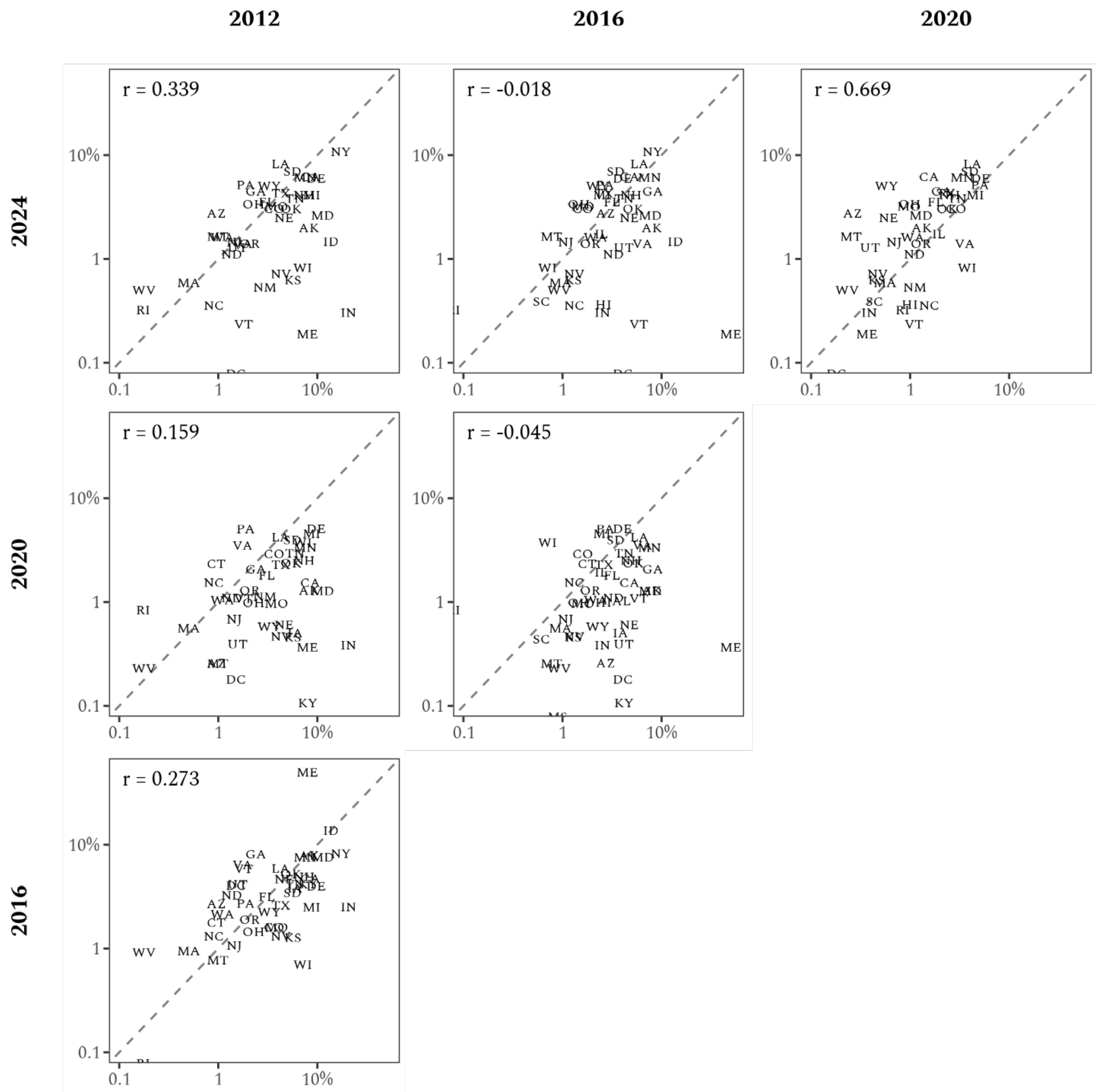


Figure 12: Logged UOCAVA Ballot Rejection Rates by State



5.7 Military and overseas ballots unreturned

5.7.1 *Data source*

Election Administration and Voting Survey

Despite the challenges of transmitting UOCAVA ballots to voters overseas, the return rate of UOCAVA ballots has been increasing over the years, as the return rate of civilian absentee ballots has been falling. In 2008, for instance, if we examine the set of counties that reported all the necessary data to calculate return rates for both UOCAVA and domestic absentee ballots, the UOCAVA non-return rate was 28.0%, compared with 10.2% for domestic civilian absentee ballots. Similar analysis for 2016 reveals that the non-return rate for UOCAVA ballots had fallen to 19.9%, while the non-return rate for domestic civilian absentee ballots had risen to 19.7%. Whatever the source for this turnaround, overseas voters now have at least as great a chance that their ballots will get back to the election office as civilians.

In earlier years, the very high non-return rate for UOCAVA ballots was probably related to the period for which a ballot request was in force. Under the original UOCAVA provisions, an application to become a UOCAVA voter could be valid for two federal election cycles. The MOVE Act changed this, allowing states to narrow to a single calendar year the period to which a ballot request applied. The original UOCAVA provision may have resulted in a large number of ballots being mailed that were not needed (or wanted), at a cost to election offices. The decline in the non-return rate suggests that this provision of the MOVE Act may have had its intended effect.

5.7.2 *Coding convention*

Expressed as an equation, the UOCAVA ballot non-return rate can be calculated as follows from the EAVS datasets:

$$\text{UOCAVA non-return rate} = 1 - \frac{\text{Total UOCAVA ballots returned}}{\text{Total UOCAVA ballots transmitted}}$$

Table 24: EAVS variables used to calculate UOCAVA not returned indicator

Descriptive name	**2008 EAVS**	**2010-2016 EAVS**	**2018-2020 EAVS**	**2022 EAVS**	**2024 EAVS**
UOCAVA ballots returned	b2	qb2a	B9a	B9a	B11a
UOCAVA ballots transmitted	b1a	qb1a	B5a	B5a	B5a

Data will be missing if a county has failed to provide any of the variables, detailed in Table 24, included in the calculation. Because of missing data, it was not possible to compute UOCAVA ballot non-return rates in six states in 2024, up from three states in 2020 and just one state in 2022.

Table 25: States with too much missing data to calculate UOCAVA not returned indicator

Year	State
2008	CT, HI, MS, NY, OR, WV
2010	No states with missing data
2012	AL, IL, MS
2014	IL, UT, VT
2016	NY
2018	AR, CT, HI, IL, MS, ND, RI
2020	AR, ID, NY
2022	IL
2024	AL, AR, CT, IA, KY, MS

5.7.3 *Comparisons over time*

We begin by comparing UOCAVA ballot non-return rates, measured at the county level, for 2016, 2018, 2020, 2022, and 2024. Although there are outliers for all years, on the whole the data series does not exhibit the pronounced skew that is evident with many indicators based on EAVS data. This is illustrated in the histograms in Figure 13, which show the distribution of non-return rates for 2016, 2018, 2020, 2022, and 2024 for each county for which we have the relevant data.

The scatterplots in Figure 14 show the non-return rates measured at the county level from 2016 to 2024 and plotted against each other. Because the data do not exhibit a pronounced skew, we use the raw (rather than logged) rates. So that the influence of larger counties is visually greater than that of smaller counties, we weight the data tokens in proportion to the number of registered voters in each county. As Figure 14 illustrates, for counties that reported the data necessary to calculate non-return rates, there is a weak relationship between non-return rates when we compare any two years. In addition, non-return rates are generally higher in midterm years than in the presidential years. The Pearson correlation coefficients, which measure the degree of similarity across these presidential election cycles, range between 0.238 and 0.359.

The EPI reports UOCAVA ballot non-return rates at the state level. Figure 15 compares non-return rates at the state level in 2008, 2012, 2016, 2020, and 2024. As with the measures calculated at the county level, the indicator calculated at the state level is not very stable when we compare across years.

Figure 13: UOCAVA Ballot Non-return Rates by County

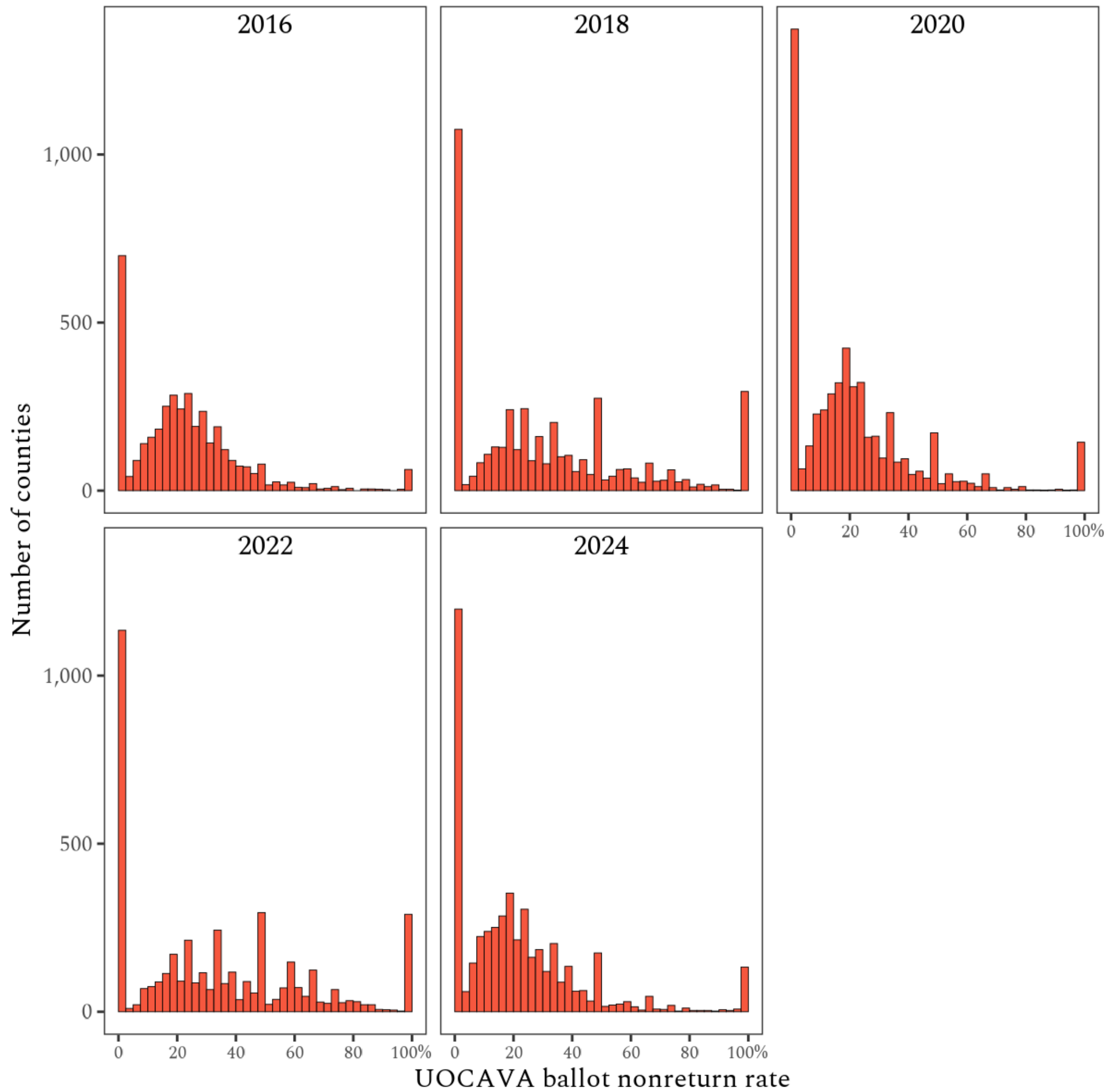


Figure 14: UOCAVA Ballot Non-return Rates by County

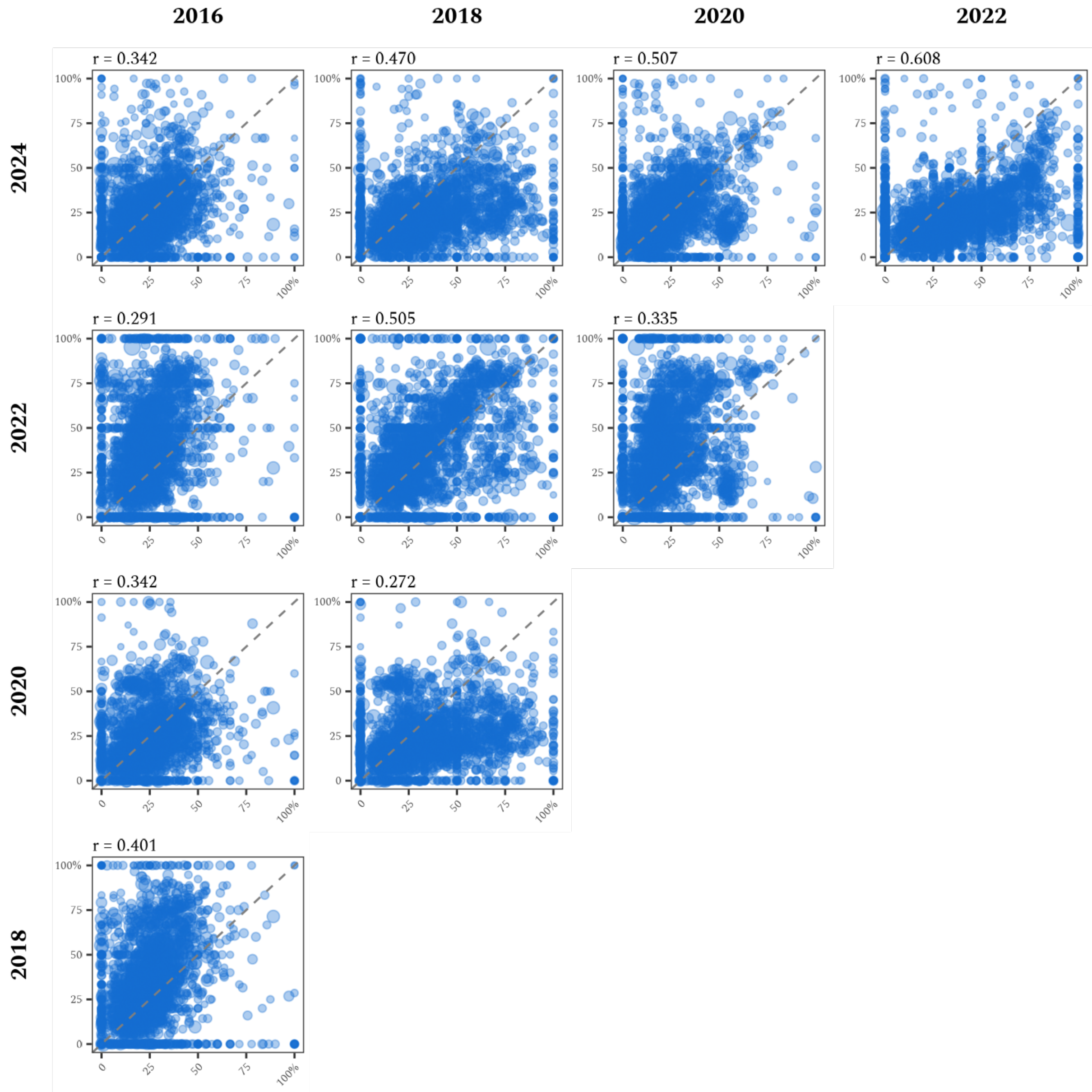
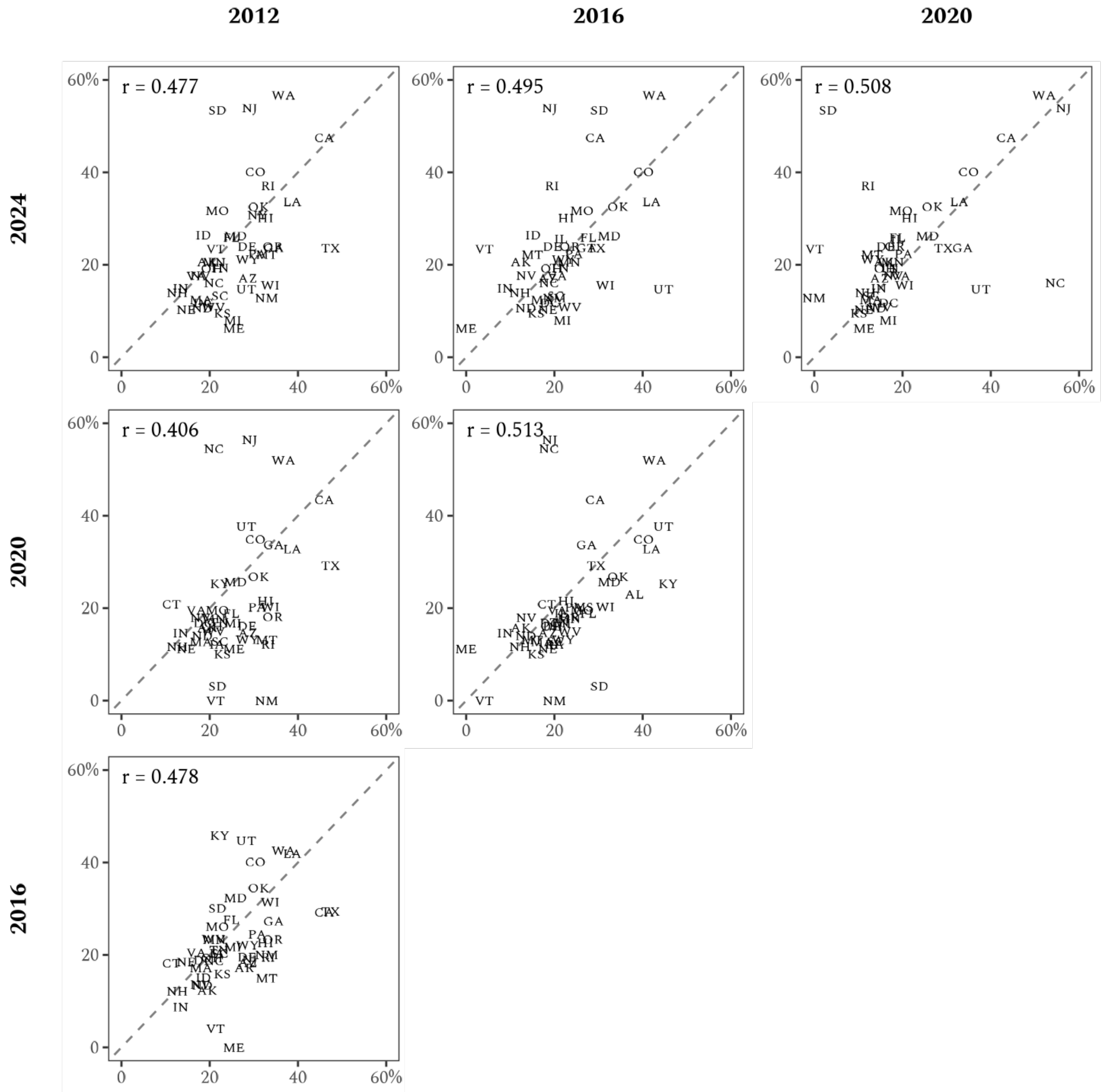


Figure 15: UOCAVA Ballot Non-return Rates by State



5.8 Online registration available

5.8.1 *Data source*

National Conference of State Legislatures and state election offices

Increasingly, business transactions have migrated online, which has resulted in savings for businesses and greater convenience for consumers. Voter registration, in a sense, is a similar type of transaction; one which can benefit both election offices and voters by moving online. Compared with traditional paper processes, online registration has been shown to save money, increase the accuracy of voter lists, and streamline the registration process. In addition to reducing state expenditures, online tools can also be more convenient for voters.

We consider a state as having online voter registration if it offers the option of an entirely paperless registration process that is instituted in time for eligible voters to register online for the corresponding election. If the state has a tool that helps a voter fill out the form online but he or she still has to print it (and possibly physically sign it) before returning it to a local election office, this does not constitute online voter registration. States that have an e-signature program that electronically populates the voter registration record from information on file with a different state agency (for example, Department of Motor Vehicles) also are not included.

Beginning with the 2014 release of the index, we give states that allow voter registrations to be updated online "half credit" for having online registration. North Dakota, the only state without voter registration, is not given a score for this indicator.

5.9 Post-election audit required

5.9.1 *Data source*

Statutory Overview of the Election Administration and Voting Survey, National Conference of State Legislatures, and Verified Voting

One of the lessons learned from careful scrutiny of the 2000 election results is that many states did not have a systematic program of auditing the performance of voting equipment after an election. Such an audit of voting equipment requires different procedures and approaches than do counting and recounting ballots, and it has different goals. States that have post-election audit requirements should be able to spot emerging problems with voting equipment before they cause crises, allowing election administrators to improve the voting equipment.

Generally speaking, a post-election audit involves the close scrutiny of election returns from a sample of precincts or voting machines, or both. The audit might involve simply recounting all of the ballots cast among the sample and comparing the recount with the original total. An audit might also involve scrutiny of other records associated with the election, such as logbooks. Sampling techniques can follow different protocols, ranging from simple random samples of a fixed percentage of voting machines to "risk-limiting" audits that select the sample depending on the likelihood that recounting more ballots would overturn the election result.[32] Although post-election audits are recognized as a best practice to ensure that voting equipment is functioning properly, that proper procedures are being followed, and that the overall election system is reliable, the practice of auditing is still in its relative infancy. Therefore, a consensus has not arisen about what constitutes the necessary elements of an auditing program.

As a consequence, this measure is based simply on the binary coding of whether the state requires a post-election audit of vote totals. The requirement may come from statute, administrative rule, or administrative directive. The primary data source is the Statutory Overview portion of the EAC's Election Administration and Voting Survey, the National Conference of State Legislatures,[33] and Verified Voting[34] supplemented by direct communication with state election offices. It is not based on a further coding of the specific provisions in state law, nor is it based on the findings of the audits themselves. (For instance, it is not based on measures of how close audited election results come to the original, certified results.) Note that North Dakota enacted SB 2175 in 2025, which requires post-election audits in future elections. Because this law was not in effect for the 2024 election, North Dakota is coded as 0 for the 2024 EPI.

5.10 Provisional ballots cast

5.10.1 *Data source*

Election Administration and Voting Survey

The provisional ballot mechanism allows voters whose registration status is in dispute to cast ballots, while leaving the registration status question to be resolved after Election Day. Provisional ballots have other uses, too. Some states have begun using them essentially as change-of-address forms for voters who have moved. Some jurisdictions allow provisional ballots cast in the wrong precinct to be counted.

Unless provisional ballots are being given to voters for other administrative reasons, a large number may indicate problems with voter registration records. The meaning of a small number of provisional ballots, from an election administration standpoint, is more open to question. On the one hand, it may indicate that registration records are up to date; on the other hand, it may be the result of poll workers not offering voters with registration problems the provisional ballot option when appropriate.

5.10.2 *Coding convention*

Expressed as an equation, the provisional ballot participation rate can be calculated as follows from the EAVS datasets:

$$\text{Provisional ballot participation rate} = \frac{\text{Total provisional ballots cast}}{\text{Total participants in the election}}$$

Table 26: EAVS variables used to calculate provisional ballot participation indicator

Descriptive name	**2008 EAVS**	**2010-2016 EAVS**	**2018-2020 EAVS**	**2022 EAVS**	**2024 EAVS**
Provisional ballots cast	e1	qe1a	E1a	E1a	E1a
Total participants	f1a	qf1a	F1a	F1a	F1a

Table 27: States with too much missing data to calculate provisional ballot participation indicator

Year	State
2008	AL, IL, IN, ME, MS, NY, WV, WY
2010	IL, MS, NY, SC, WV, WY
2012	MS, SC, WV, WY
2014	IN, UT, WY
2016	AL, WI
2018	AR, VA
2020	No states with missing data
2022	IL
2024	No states with missing data

As in 2020, all states that are included for this indicator reported enough data in 2024 to calculate the provisional participation indicator. We did not include states that do not use provisional ballots (Idaho, Minnesota, New Hampshire, and Vermont)[35] or North Dakota, which does not require voters to register. Vermont is a special case: state law permits provisional ballots, but their use is extremely rare and Vermont does not report provisional ballot data in EAVS, so we treat the state as not using provisional ballots for the purposes of this indicator.

5.10.3 *Comparisons over time*

We begin by comparing provisional ballot usage rates, measured at the county level. The data are right-skewed; most counties have very low usage rates, while a few have relatively high rates. This is illustrated in Figure 16, which shows the distribution of usage rates for each county for which we have the relevant data.

Because of this pronounced right skew, any scatter plot that compares two years will be misleading because the bulk of observations will be clumped around the origin, with our eye drawn toward the small number of outliers with extremely large values.

To deal with this problem, we transform the measures by taking logarithms. One problem that emerges is that a large fraction of counties had no provisional ballots in particular years, and the logarithm of zero is undefined. Therefore, in the scatter plot in Figure 17, counties with zero provisional ballots have been set to 0.0000001, which is slightly below the smallest nonzero usage rate that was observed. Finally, so that the influence of larger counties is visually greater than that of smaller counties, we weight the data tokens in proportion to the size of the counties. As these graphs illustrate, for counties that reported the necessary data, usage rates are similar across any pair of compared years. The Pearson correlation coefficient, which measures the degree of similarity across these five election cycles, ranges between 0.661 and 0.765.

These graphs also illustrate how counties that report no provisional ballots in one election cycle often report a considerably greater usage rate in the next cycle. Sometimes this is

because the county is very small. Provisional ballot usage rates were overall relatively low, averaging 1–2% from 2008 to 2016. In 2020, provisional participation rates averaged 1.02% of ballots cast at the state level. In the 2022 midterm, the average fell to 0.65%, before rising to 1.03% in 2024. However, median rates tell a different story: the median fell from 0.42% in 2020 to 0.24% in 2022 and 0.29% in 2024, indicating that the distribution has become increasingly right-skewed, with a small number of high-usage states pulling up the mean while most states saw lower rates.

There are fluctuations in the participation rate, where a county with only a few hundred registered voters might very well experience an election cycle in which no provisional ballots were used. However, relatively large counties will sometimes report zero provisional ballots in one election cycle and a relatively large number in the other cycle. This sort of behavior calls for further investigation. Until such research is conducted, this pattern alerts us to the need to be cautious when using data on the use of provisional ballots.

The EPI reports provisional ballot use at the state level. The statewide usage rates are similarly right-skewed; therefore, it is necessary to translate the rates into logarithms before plotting the usage against each other. As with the measures calculated at the county level, the indicator calculated at the state level is very stable when we compare across years.

Figure 16: Provisional Ballot Participation Rates by County

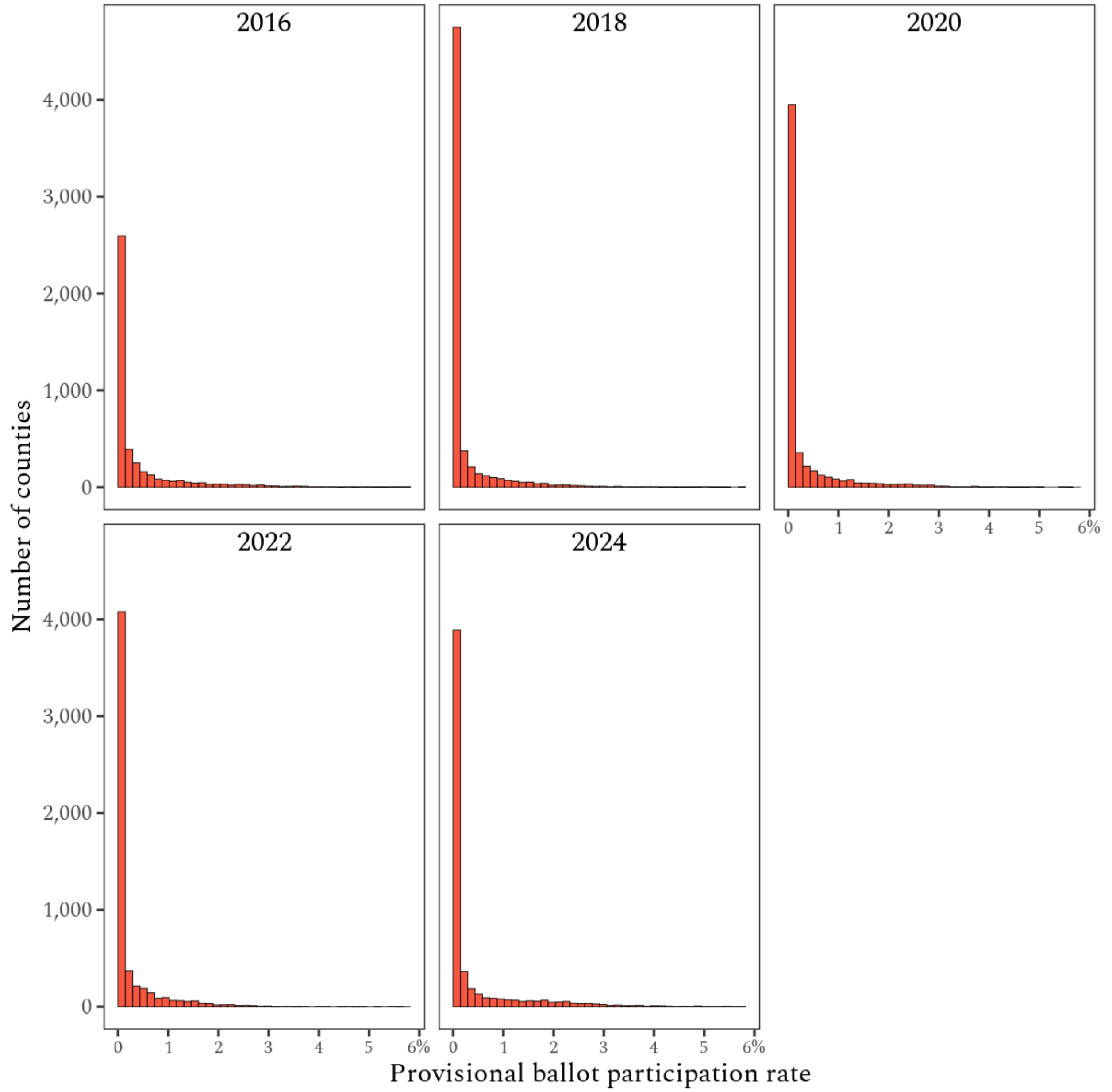


Figure 17: Logged Provisional Ballot Participation Rates by County

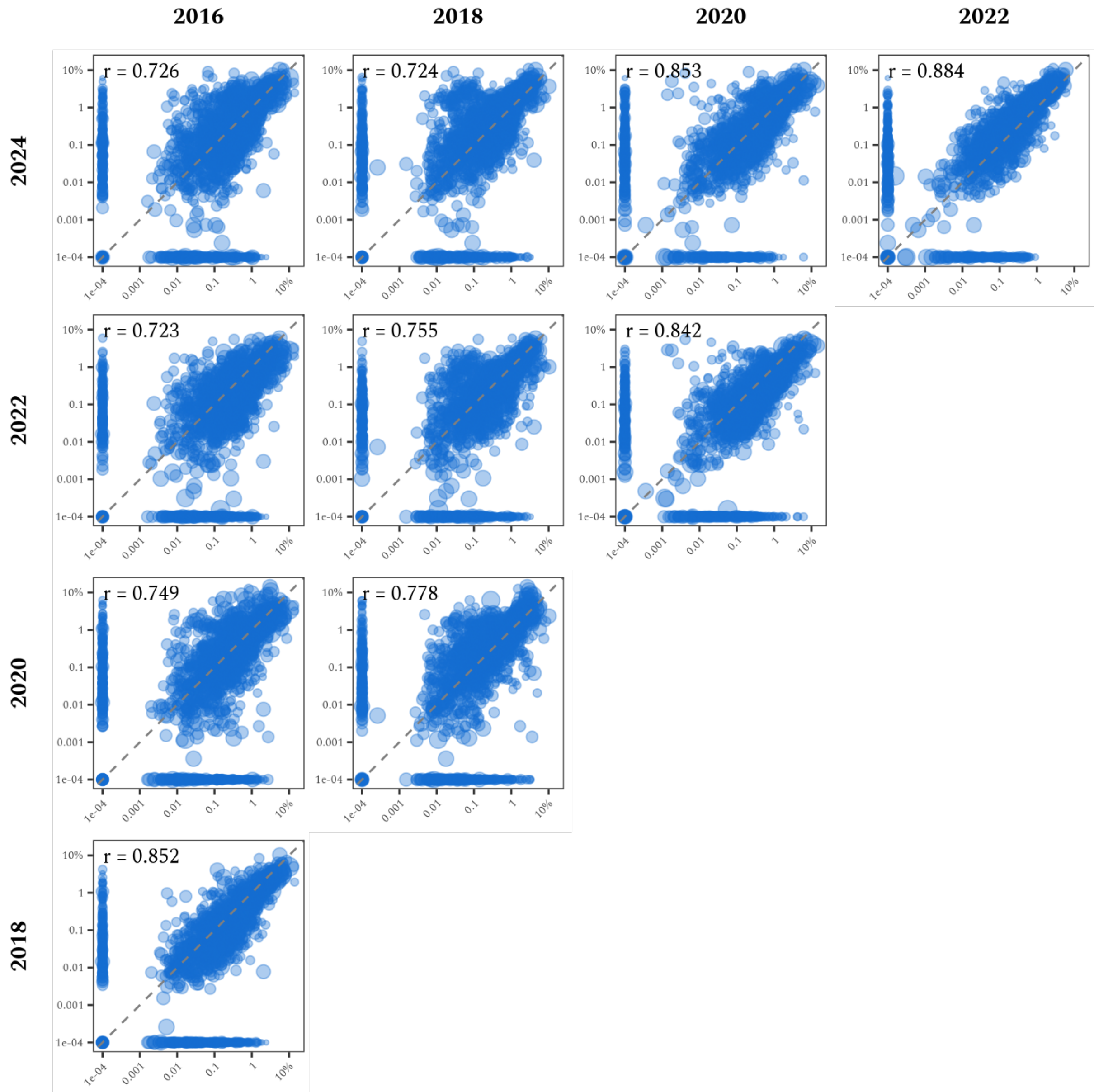
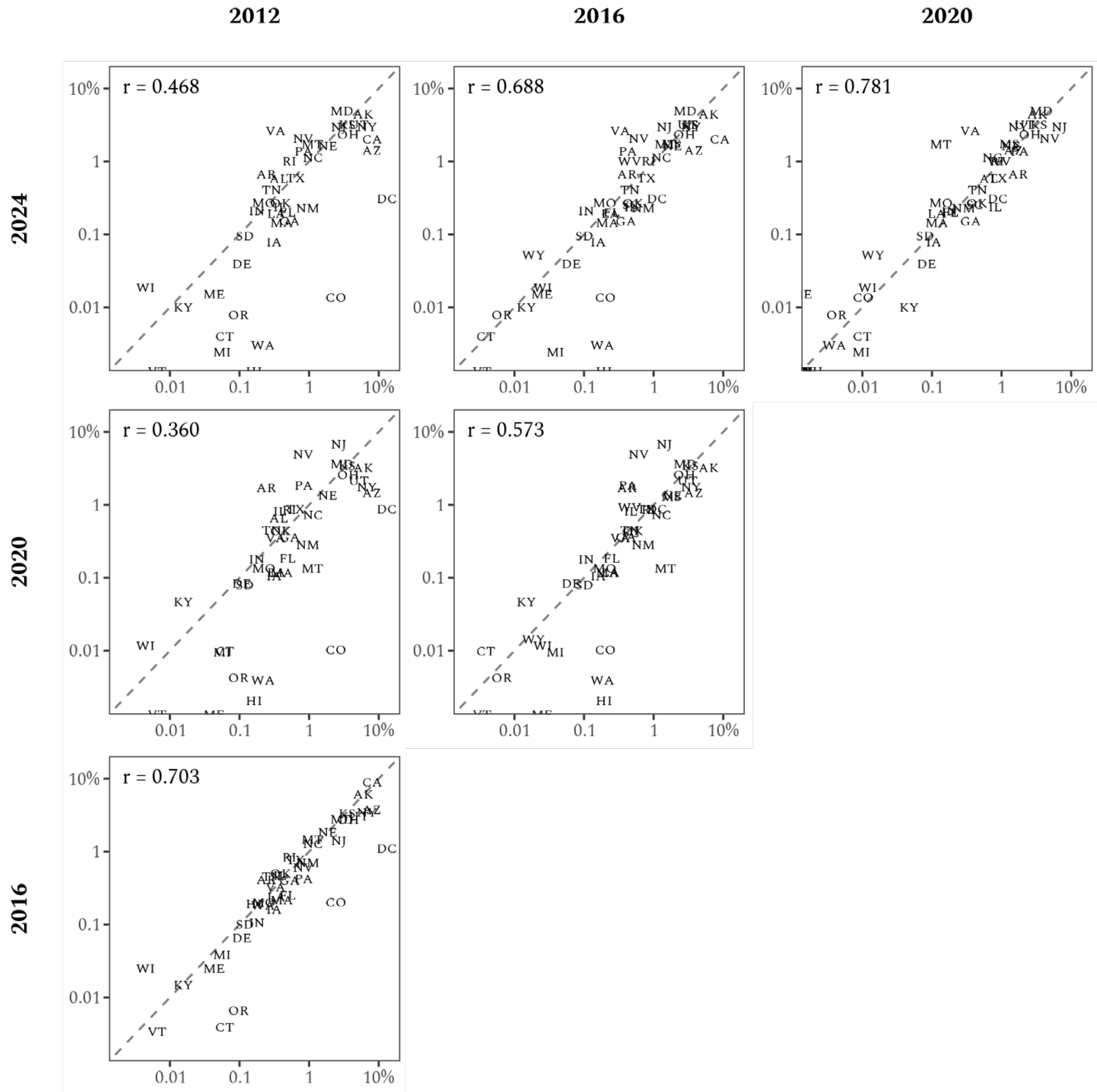


Figure 18: Logged Provisional Ballot Participation Rates by State



5.11 Provisional ballots rejected

5.11.1 *Data source*

Election Administration and Voting Survey

Provisional ballots are cast for a variety of reasons. Whether a provisional ballot is eventually counted depends on why the voter was issued such a ballot and the rules for counting provisional ballots in the voter's state.

States vary in the criteria they use to determine if a provisional ballot should be issued and, later, counted. The most significant difference among states is that some reject provisional ballots cast in the wrong precinct, while others count part of those ballots.

5.11.2 *Coding convention*

Expressed as an equation, the provisional ballot rejection rate can be calculated as follows from the EAVS datasets:

$$\text{Provisional ballot rejection rate} = \frac{\text{Rejected provisional ballots}}{\text{Total participants in the election}}$$

Table 28: EAVS variables used to calculate provisional ballots rejected indicator

Descriptive name	**2008 EAVS**	**2010-2016 EAVS**	**2018-2020 EAVS**	**2022 EAVS**	**2024 EAVS**
Provisional ballots rejected	e2c	qe1d	E1d	E1d	E1d
Total participants	f1a	qf1a	F1a	F1a	F1a

Table 29: States with too much missing data to calculate provisional ballots rejected indicator

Year	**State**
2008	AL, AR, IL, IN, ME, MS, NM, NY, OR, SD, WV, WY
2010	MS, NY, SC, WY
2012	MS, SC, VT, WV, WY
2014	IN, UT, WY
2016	AL, SD, WI
2018	AR, VA
2020	No states with missing data
2022	IL
2024	No states with missing data

As in 2020, all states that are included for this indicator reported enough data in 2024 to calculate the provisional rejection indicator. We did not include states that do not use provisional ballots (Idaho, Minnesota, New Hampshire, and Vermont)[36] or North Dakota, which does not require voters to register.

The decision was made to use total participants in the general election as the denominator, rather than number of provisional ballots issued, for two reasons. First, states that issue large numbers of these ballots, measured as a percentage of all votes cast in an election, tend to also accept a large number of those ballots, measured as a percentage of provisional ballots cast. Thus, the percentage of provisional ballots rejected as a percentage of provisional ballots cast measures only the legal context under which provisional ballots are used and does little beyond that to illustrate the health of elections in a state. Second, the number of provisional ballots rejected represents voters who tried to vote and were turned away. Large numbers of such voters relative to the number of total participants in the election represent not only lost opportunities by voters to cast ballots, but also greater opportunities for disputes about an election's results. In other words, a large number of provisional ballots left uncounted for whatever reason, as a share of total participants, indicates a mix of administrative problems and the potential for litigation, neither of which can be considered positive.

5.11.3 *Comparisons over time*

We begin by comparing provisional ballot usage rates, measured at the county level. The raw data exhibit a pronounced right skew. That is, most counties have very low rejection rates, while a few have relatively high rates. This is illustrated in Figure 19, which shows the distribution of rejection rates for 2016, 2018, 2020, 2022, and 2024 for each U.S. county for which we have the relevant data. Because of this pronounced right skew, any scatterplot that compares values across two years will be misleading in that the bulk of observations will be clumped around the origin, with our eye drawn toward the small number of outliers with extremely large values. To deal with this pronounced right skew, it is common to transform the measures by taking logarithms. One problem this creates is that a large fraction of counties had zero provisional ballots rejected in these five years, and the logarithm of zero is undefined. Therefore, in the scatterplot in Figure 20, counties with zero provisional ballots have been set to 0.0000001, which is slightly below the smallest nonzero rejection rate that was observed. Finally, so that the influence of larger counties is visually greater than that of smaller counties, we weight the data tokens in proportion to the size of the county.

As these graphs illustrate, for counties that reported the necessary data in 2016, 2018, 2020, 2022, and 2024, rejection rates are somewhat similar across these years. The Pearson correlation coefficient, which measures the degree of similarity across these election cycles, ranges between 0.675 and 0.754.

These graphs also illustrate how counties that report no rejected provisional ballots in one election cycle often report a considerably greater rejection rate in the next cycle. Sometimes this is because the county is very small. With provisional ballot rejection rates over-

all being relatively low, averaging no more than half a percentage point during this period, a county with only a few hundred registered voters might experience an election cycle in which no provisional ballots were rejected. However, relatively large counties will sometimes report zero provisional ballots rejected in one election cycle and a relatively large number in the other cycle. This sort of behavior calls for further investigation. Until such research is conducted, this pattern alerts us to the need to be cautious when using data on the rejection of provisional ballots.

The EPI reports the rates of provisional ballot rejection at the state level. The statewide rejection rates are similarly right-skewed; therefore, it is necessary to translate the rejection rates into logarithms before plotting the rejection rates across time. As with the measure calculated at the county level, the indicator calculated at the state level is very stable when we compare across years.

Figure 19: Provisional Ballot Rejection Rates by County

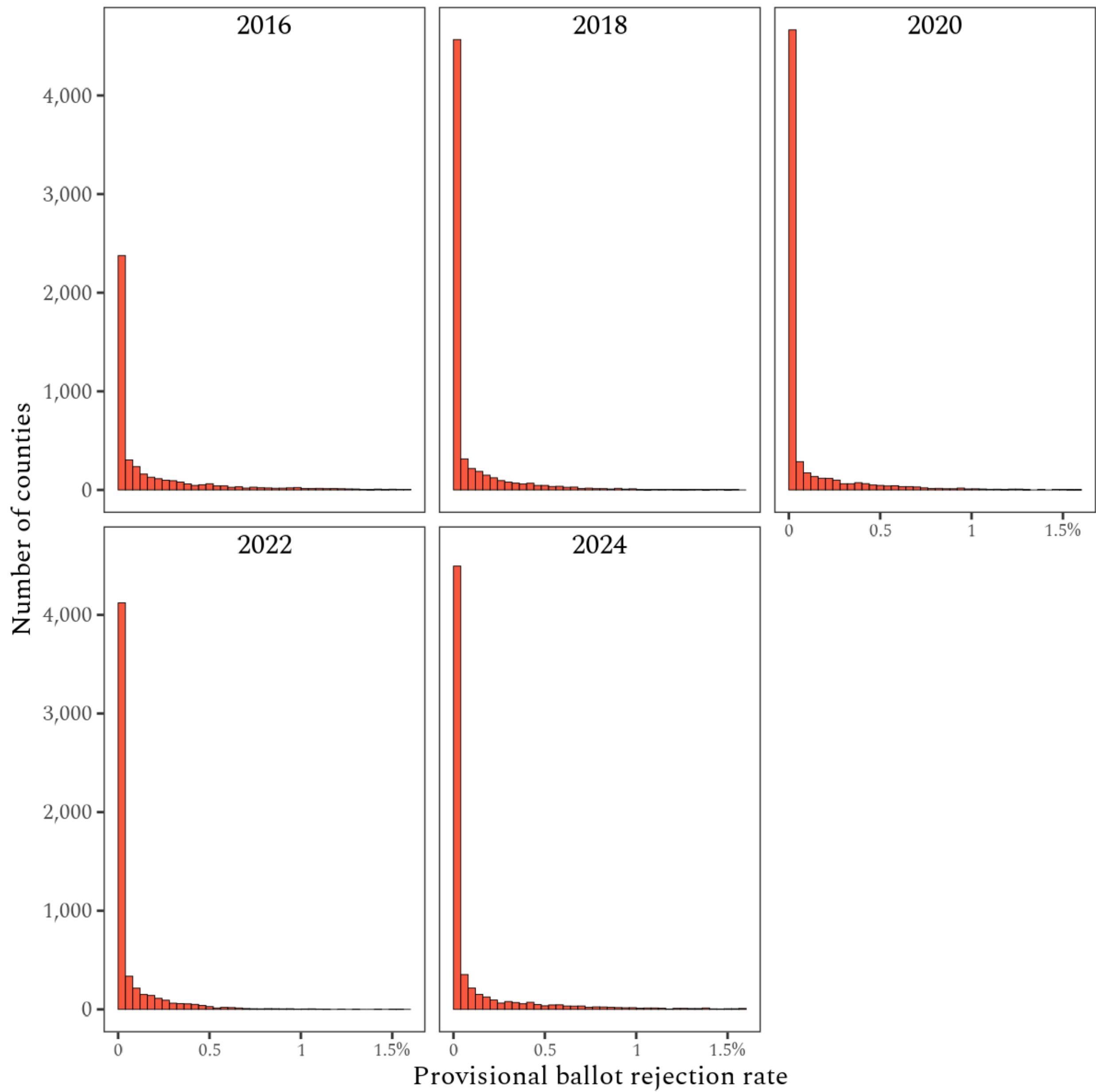


Figure 20: Logged Provisional Ballot Rejection Rates by County

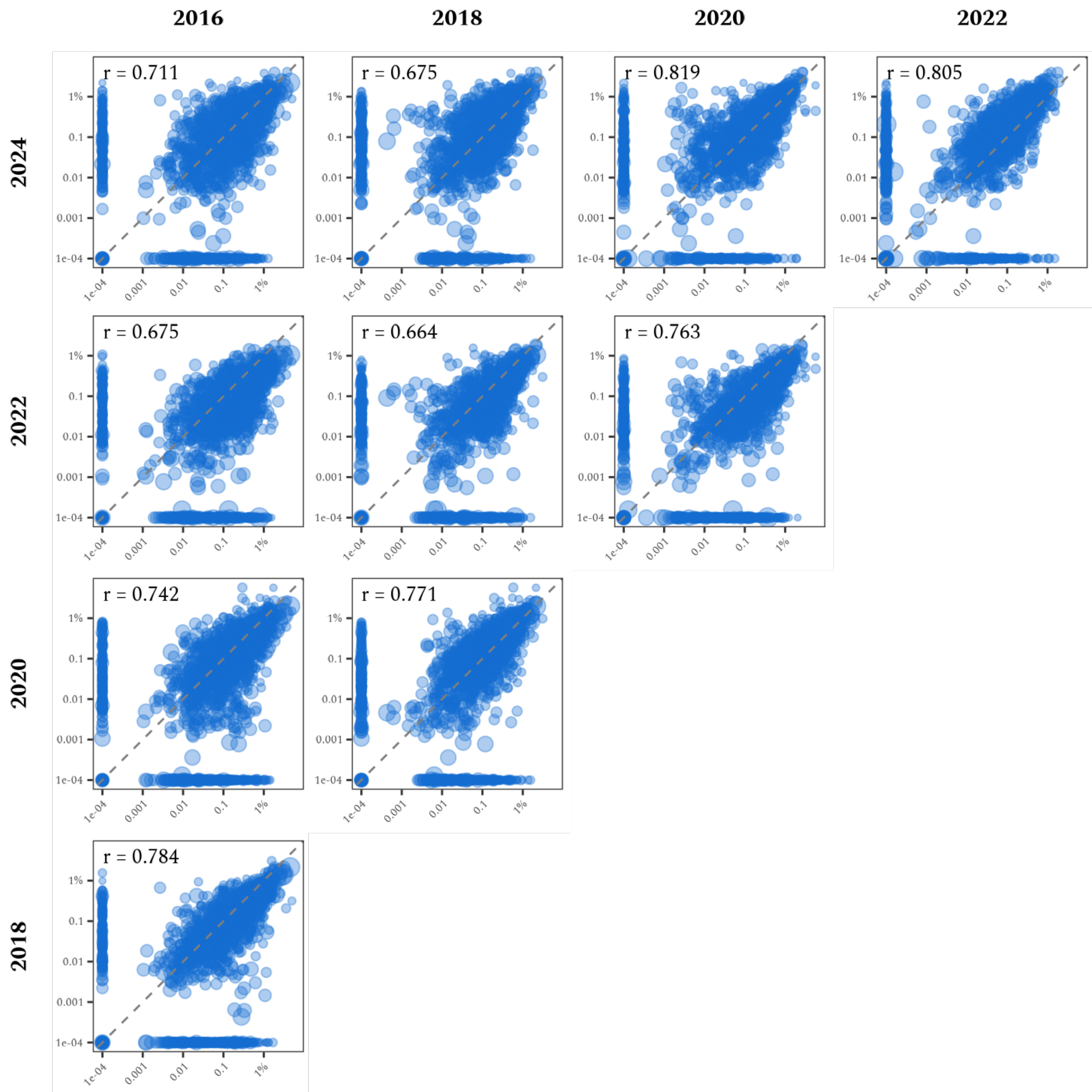
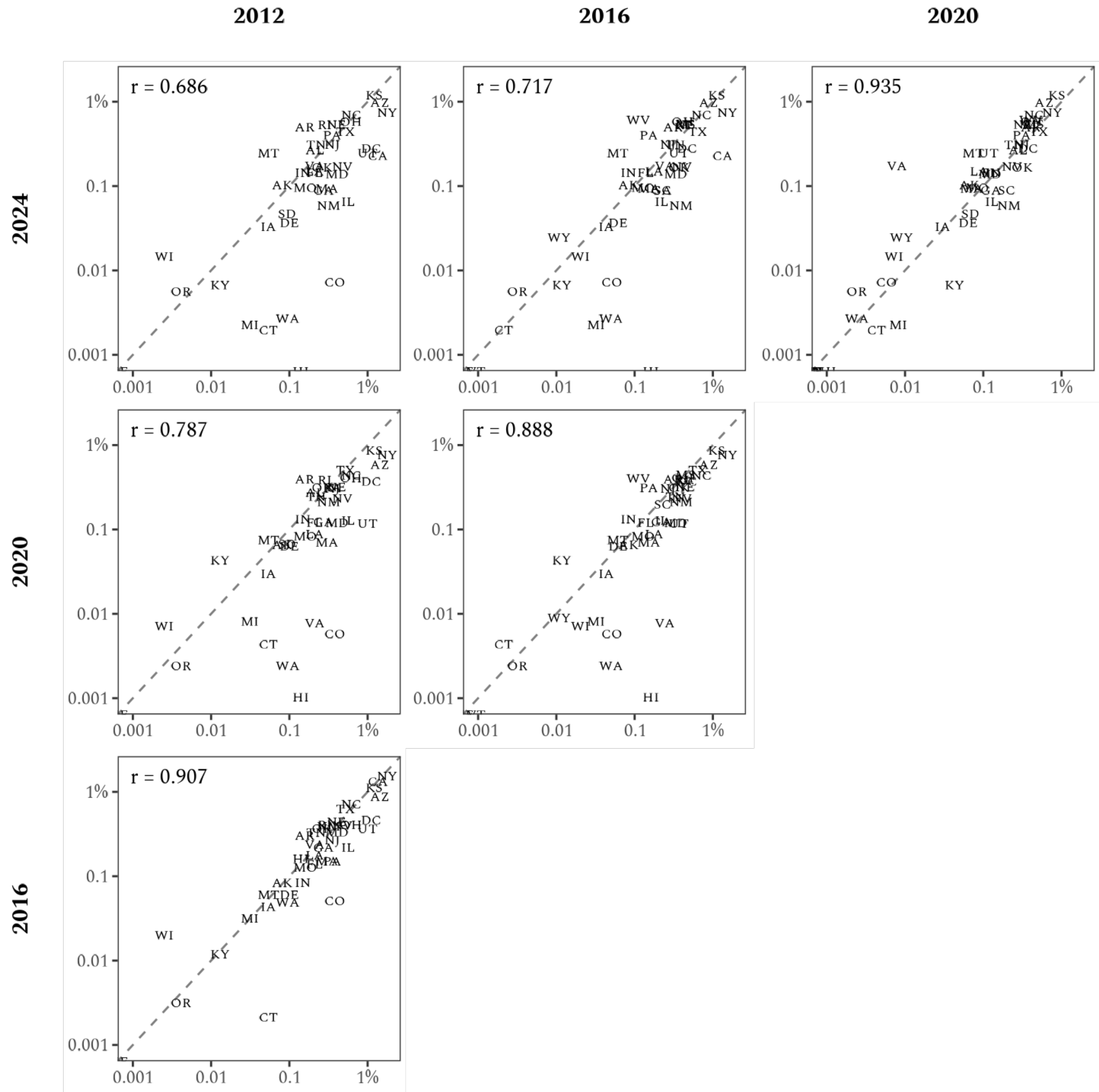


Figure 21: Logged Provisional Ballot Rejection Rates by State



5.12 Registration or absentee ballot problems

5.12.1 *Data source*

Voting and Registration Supplement to the Current Population Survey

Previous research has indicated that problems with voter registration present the greatest frustrations for voters trying to cast a ballot in an election.[37] Voters often believe they are registered when they are not, registered voters sometimes are not listed in the pollbooks, and voters are sometimes registered in a precinct other than where they show up to vote on Election Day. Reducing the number of people who fail to vote due to registration problems was a major goal of the Help America Vote Act.

5.12.2 *Coding convention*

This indicator is based on responses to the Voting and Registration Supplement of the CPS. Specifically, it is based on responses to item PES4, which asks of those who reported not voting: "What was the main reason you did not vote?" Response categories comprise the following in Table 30.[38]

Table 30: Reasons for Not Voting

Reason for not voting	2020	2022	2024
Out of town or away from home	6.3%	8.6%	7.7%
Forgot to vote	3.8%	8%	4.2%
Concerns about the coronavirus (COVID-19) pandemic	4.5%	N/A	N/A
Illness or disability (own or family member's)	13.4%	12.9%	12.8%
Not interested, felt vote would not make a difference	18.2%	18.2%	20.4%
Too busy, conflicting schedule	13.6%	27.3%	18.4%
Transportation problems	2.4%	2.2%	2.3%
Did not like candidates or campaign issues	15%	5.8%	15.2%
Registration problems	5.1%	2.5%	3.7%
Bad weather conditions	0.1%	0.3%	0.3%
Inconvenient polling place hours, or lines too long	2.7%	2.5%	2.5%
Other reason	15%	11.8%	12.6%

The 'Registration problems' response category forms the basis for this indicator.

5.12.3 *Stability of rates across time*

The rate at which registrants report they did not vote because of registration problems or failure to receive an absentee ballot will vary across time, for a variety of reasons. Some

of these reasons may be related to policy—for instance, a shift to a permanent absentee ballot list may cause an increase in the percentage of nonvoters giving this reason for not voting. Some of these reasons may be unrelated to election administration or policy, and therefore can be considered random variation.

One advantage of VRS data is that they go back many elections. The question about reasons for not voting has been asked in its present form since 2000. The current analysis covers seven federal elections for which processed state-level extracts are available, from 2012 to 2024.

Table 31: Between-year correlation of registration problems indicator

	2012	2014	2016	2018	2020	2022	2024
2012	1.000						
2014	0.436	1.000					
2016	0.288	0.240	1.000				
2018	0.312	0.392	0.185	1.000			
2020	-0.004	-0.180	-0.139	-0.340	1.000		
2022	0.132	0.250	0.449	0.193	-0.359	1.000	
2024	-0.092	0.079	-0.197	-0.060	0.095	-0.258	1.000

Table 31 is the correlation matrix reporting the Pearson correlation coefficients for values of this indicator across these seven elections.

The correlation coefficients between most pairs of elections are positive and moderate in magnitude, suggesting some underlying stability in which states report high registration problem rates. However, 2020 is a notable exception, with negative or near-zero correlations against all other years, likely reflecting the disruption to normal registration patterns during the COVID-19 pandemic. As a result, combining data across all years into a single scale is not advisable.

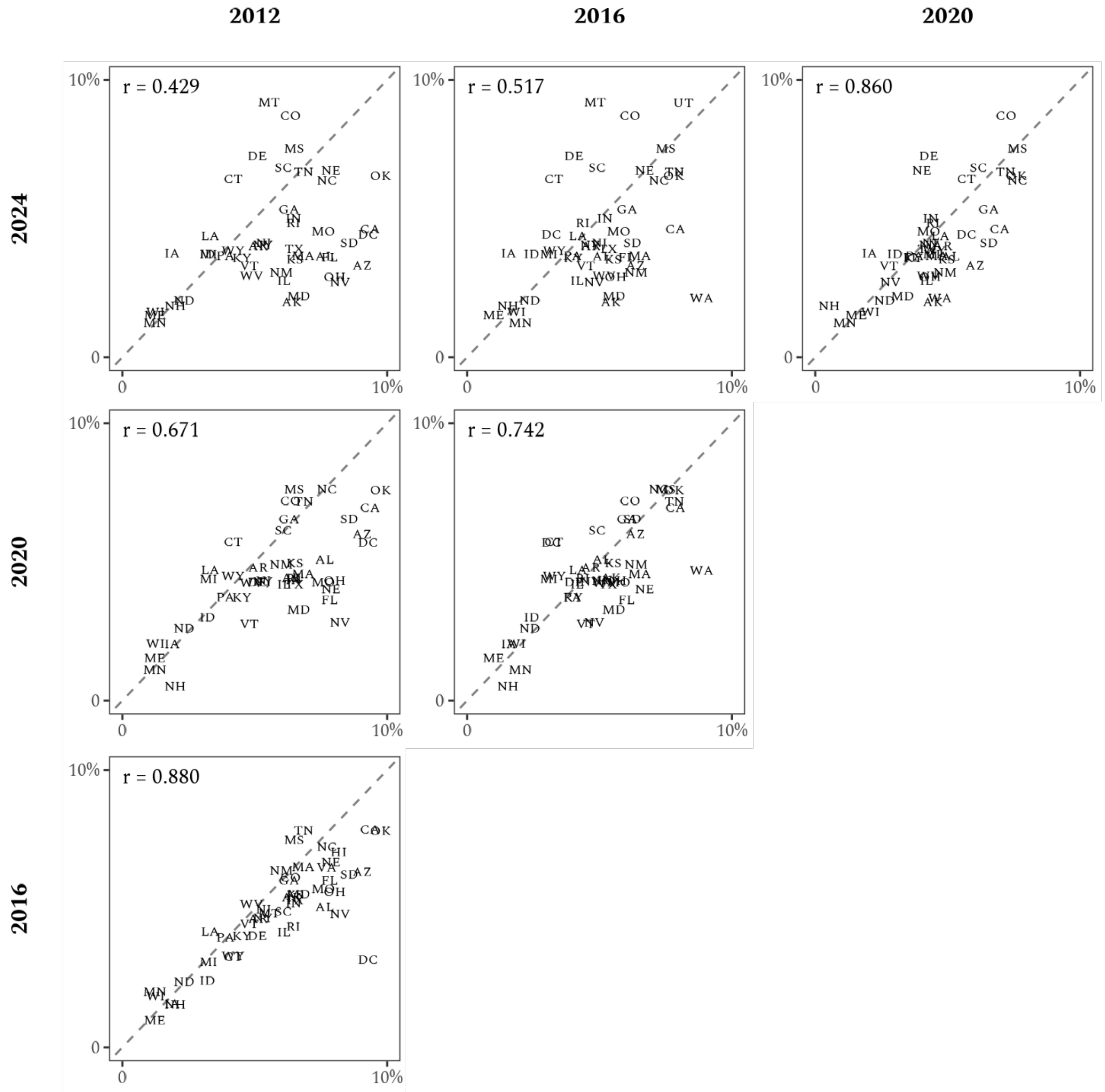
It is tempting to consider creating a single scale from this set of data because of the moderate overall intercorrelations outside of 2020. However, comparing the averages for each year reveals that more nonvoters give the "registration problem" reason in presidential election years (13.8% national average) than in midterm election years (6.6% national average). Consequently, a more prudent strategy is to treat presidential and midterm election years separately.

We created two scales from the dataset, one consisting of the average rates for the most recent three presidential election years, and the other consisting of the average rates for the three most recent midterm election years. In the original version of the EPI, we constructed the presidential election year measure using data from the 2000, 2004, and 2008 presidential elections and the midterm measure using data from the 2002, 2006, and 2010 midterm elections. In the 2010 version of the EPI, we updated the presidential election year measure by dropping the most distant presidential year previously used (2000), substituting in the most recent year (2012). Likewise, for the 2020 score, we dropped data from 2008 and added data from 2020 and for 2024 dropped data from 2012 and added data from

2024. Thus the midterm and presidential year version of the indicator will evolve over time.

Figure 22 shows the correlations across these measures as they have evolved. The Pearson correlation coefficients quantifying these relationships range from 0.429 to 0.880, substantially higher than most of the coefficients in the correlation matrix in Table 31, which rely on data from only one year.

Figure 22: Percent of Nonvoters Due to Registration Problems



5.13 Registrations rejected

5.13.1 *Data source*

Election Administration and Voting Survey

Although in most states it is necessary to register ahead of time in order to vote, research into voter registration is in its infancy. As a consequence, it is not known how many rejected registration forms are the result of ineligible voters attempting to register and how many are eligible voters who are turned away because of errors made in filling out or processing their registration forms.

Regardless of why registrations are rejected, a state or county that rejects a large share of registrations must devote a greater portion of its limited resources to activities that do not lead to votes being counted. This can be particularly challenging as an election approaches, since most registrations are received and processed in the weeks leading up to an election, when election offices also must deal with many other tasks. If a locality has a high rate of rejected registrations because of administrative problems, the situation can lead to other problems such as people who mistakenly think they have registered. This, in turn, could lead to more provisional ballots being cast, longer lines at the polls, and greater confusion on Election Day.

5.13.2 *Coding convention*

Expressed as an equation, the registration rejection rate can be calculated as follows from the EAVS datasets:

$$\text{Registration rejection rate} = \frac{\text{Invalid/rejected registrations}}{\text{(Invalid/rejected) + (valid) registrations}}$$

Table 32: EAVS variables used to calculate registrations rejected indicator

Descriptive name	**2008 EAVS**	**2010-2016 EAVS**	**2018-2020 EAVS**	**2022 EAVS**	**2024 EAVS**
Invalid/rejected (other than duplicates) registration forms	a5e	qa5e	A3e	A3e	A3f
New valid registration forms	a5b	qa5b	A3b	A3b	A3b

Data will be missing if a county has failed to provide any of the variables, detailed in Table 32, included in the calculation. The data reported for an election year includes applications received from the close of registration for the November of the previous federal election until the close of registration for the election being analyzed. For instance, for the 2024 EAVS, the registration numbers include applications received from after the close of registration for the November 2022 election until the close of registration for the November 2024 election.

Table 33 reports states with missing values for this indicator from 2008 to 2024. Rejected voter registrations is the EPI indicator that is the most beset with missing-value problems from the states. North Dakota has no voter registration and therefore was not included in this measure. In 2024, this indicator could not be calculated for 14 states, up from 11 in 2022. Because of missing data, it was not possible to compute registration rejection rates in 14 states in 2024, up from 9 states in 2020. Recent EAC work suggests that some of this fragility is structural rather than incidental. For 2024, Section A of the EAVS was revised to track registration transactions rather than registration forms and to add separate categories for automatic voter registration and other transaction types, changes that better reflect how modern statewide registration systems operate but also complicate direct comparisons with earlier survey waves.[39]

Table 33: States with too much missing data to calculate registrations rejected indicator

Year	State
2008	AR, AZ, CA, CO, DC, HI, ID, KY, MA, MD, MO, MS, NH, NM, NY, OH, OK, OR, RI, SC, SD, TN, UT, WA, WI, WV, WY
2010	AZ, CA, CT, FL, HI, ID, MO, MS, NE, NH, NM, NY, OK, OR, RI, SC, TN, VT, WA, WI, WY
2012	AL, AR, AZ, CA, CT, GA, HI, ID, KS, MS, NM, NY, OK, OR, RI, SC, SD, TN, VT, WV, WY
2014	CT, HI, ID, IL, KS, KY, MS, NM, OR, RI, SC, UT, WY
2016	AZ, CT, HI, ID, KS, NM, OR, RI, SC, WA, WI, WY
2018	AR, CT, HI, ID, IL, KS, MO, OR, RI, SC, WI, WY
2020	CT, HI, ID, KS, MO, OR, SC, WI, WY
2022	CA, CT, HI, ID, IL, KS, OR, SC, UT, WI, WY
2024	AR, CT, DE, HI, IA, ME, MS, MT, OR, SC, UT, VT, WI, WY

5.13.3 *Comparisons over time*

We begin by comparing registration rejection rates, measured at the county level. The histograms in Figure 23 show the distribution of rejection rates for 2016, 2018, 2020, 2022, and 2024 for each county in the United States for which we have the relevant data. The data exhibit what is known as a pronounced "right skew." That is, most counties have very low rejection rates (with a peak on the left of both histograms representing the large portion of counties with rejection rates at or near zero), while a few have relatively high rates (the small smattering of observations in the right-hand "tail" of each histogram).

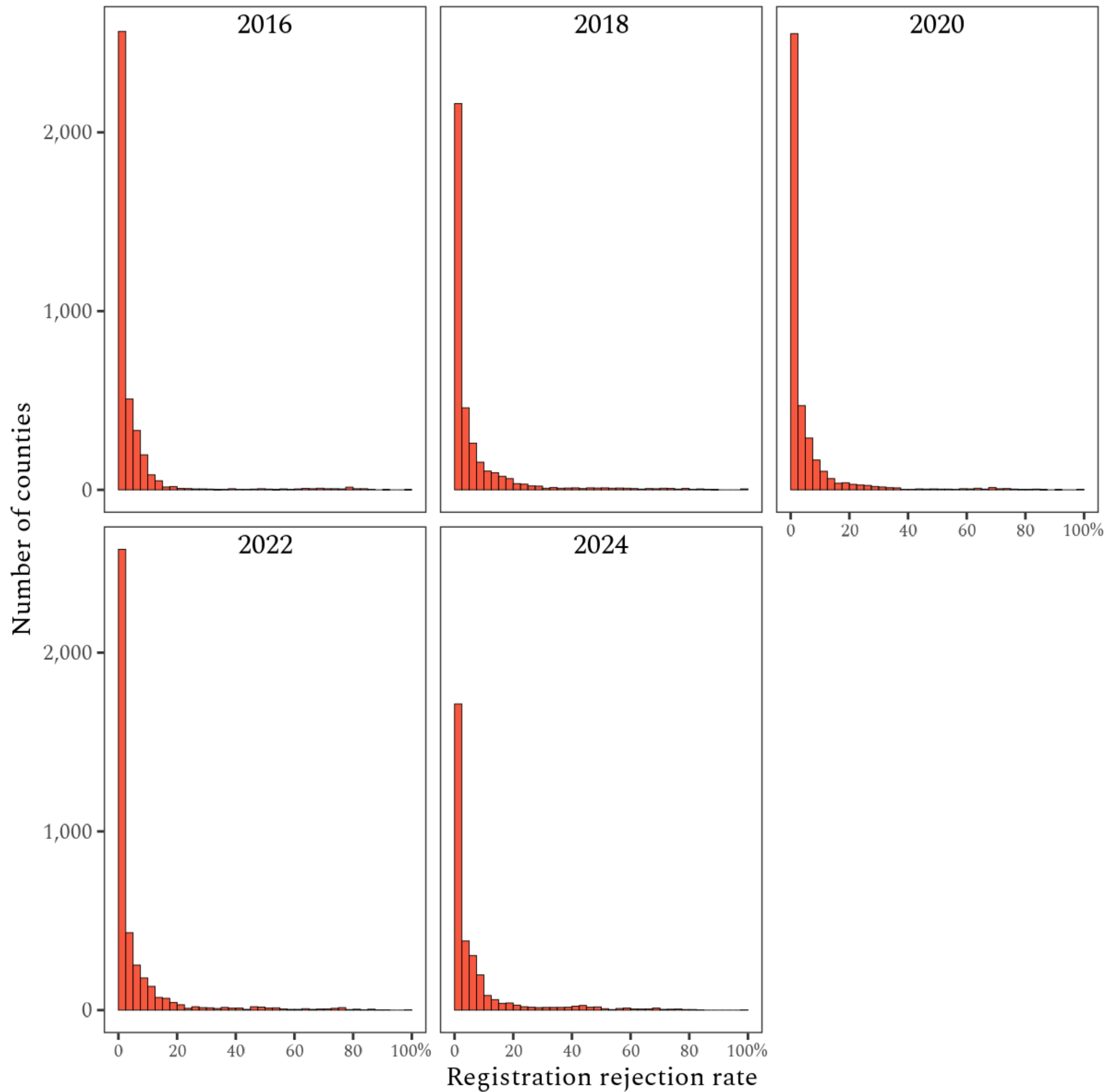
Because of this pronounced right skew, any scatterplot that compares values across years will be misleading in that the bulk of observations will be clumped around the origin, but the viewer's eye will be drawn to the small number of outliers with extremely large values. To deal with this pronounced right skew, we rely on the common practice of transforming

the measures by taking logarithms. However, one problem this creates is that a large fraction of counties had zero rejected registration forms in each year, and the logarithm of zero is undefined. Therefore, in the scatterplot in Figure 24, counties with zero rejected registration forms have their rejection rate set to 0.000001, which is slightly below the lowest nonzero rejection rate that was actually observed. Finally, so that the influence of larger counties is visually greater than that of smaller counties, we weight the data tokens in proportion to the size of the county's registration activity.

As these graphs illustrate, for counties that reported the data necessary to calculate rejection rates for 2016, 2018, 2020, 2022, and 2024, rejection rates are highly similar across years. The Pearson correlation coefficient, which measures the degree of similarity across these election cycles, ranges between 0.769 and 0.857.

These graphs also illustrate how counties that report zero rejections in one election cycle often report a considerably greater rejection rate in the next cycle. With rejection rates overall being relatively low, in many cases, the jump in rejection rate between years is simply because a county is very small. For example, a county that receives only 20 new registration applications per election cycle may easily reject none in 2008 but reject two, or 10%, in 2010. However, relatively large counties will sometimes report zero rejections in one election cycle and a relatively large number in the other cycle. This sort of pattern calls for further investigation and research. Until such research is conducted, this pattern alerts us to the need to be cautious when using data about the rejection rates of voter registration forms.

Figure 23: Registration Rejection Rates by County



As Figure 25 illustrates, for states that reported the data necessary to calculate rejection rates, rejection rates are very similar across presidential election years. When we aggregate rejection rates to the state level, as seen in Figure 25, the Pearson correlation coefficients across the four presidential election cycles from 2012 to 2024 range between 0.632 and 0.909.

Figure 24: Logged Registration Rejection Rates by County

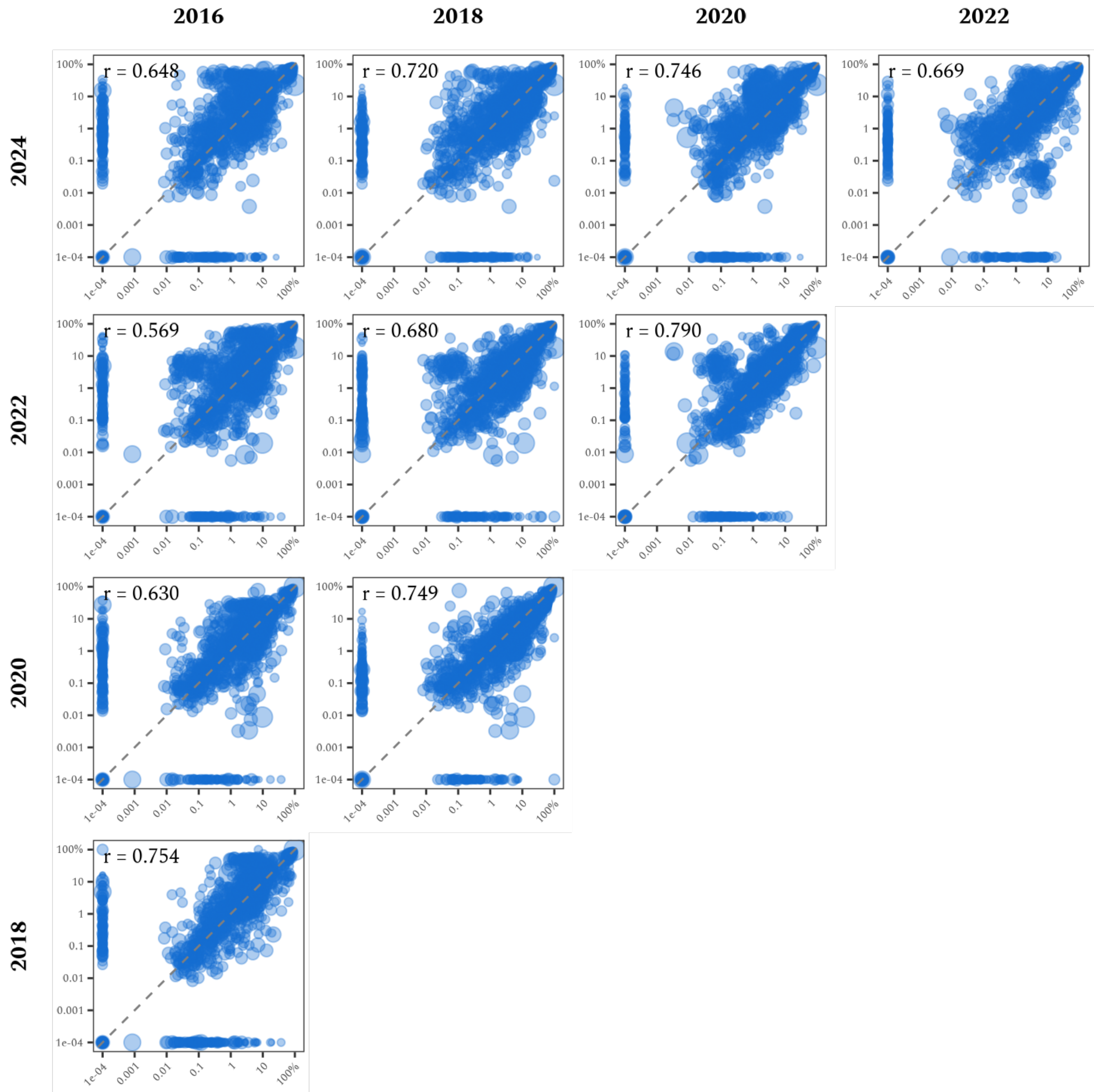
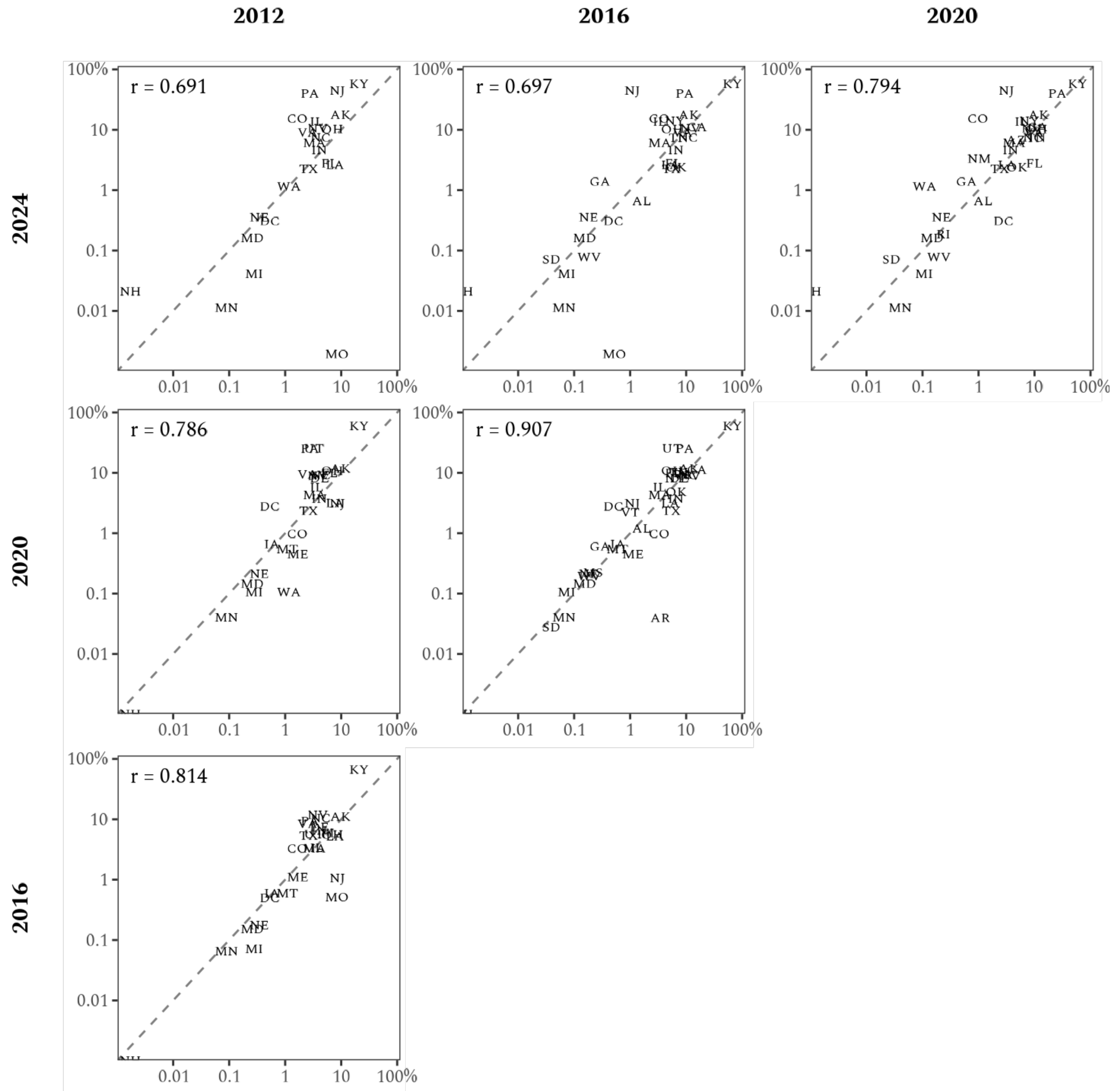


Figure 25: Registration Rejection Rates by State



5.14 Residual vote rate

5.14.1 *Data source*

State boards of elections

The controversies surrounding "hanging chads" and "butterfly ballots" after the 2000 presidential election demonstrated to Americans how efforts to vote might be undermined by malfunctioning voting equipment or confusion induced by poor ballot design. The leading way to assess the accuracy of voting technology is using the residual vote rate, which measures votes that are "lost" at the point when ballots are cast for president. Efforts to improve the technology of voting should be evident by the reduction of the residual vote rate, the measurement in the Voting Technology Accuracy indicator.

The residual vote rate can be defined as the sum of over- and undervotes in a particular election, divided by the total number of voters who turned out. Pioneered by the Caltech/MIT Voting Technology Project, this measure has become a standard benchmark in assessing the overall accuracy of machines and documenting the improvement as old machines were replaced by new ones.[40] Although other measures of voting machine quality exist, no other widely used metric today can be applied uniformly throughout the country.

5.14.2 *Coding convention*

Expressed as an equation, the residual vote rate can be calculated as follows:

$$\text{Residual vote rate} = \frac{\text{Reported total turnout} - \text{Total votes counted}}{\text{Reported total turnout}}$$

The residual vote rate must be calculated with respect to a particular election. The only election that is comparable across the entire country is the race for president, so this indicator is based on the residual vote rate for the president. Therefore, it is calculated only for presidential election years. In midterm elections, there is too much variability in terms of which races are atop the ticket in each state and in terms of the competitiveness of statewide races, which make the residual vote rate a weak interstate measure of voting machine accuracy.

The data were gathered for this measure from the official returns of state election offices. Two special considerations must be kept in mind in calculating this measure. First, the residual vote rate can be calculated only if a state requires local jurisdictions to report turnout (the number of voters taking ballots in a particular election). As in 2020, seven states were excluded for this reason in 2024: Kansas, Maryland, Missouri, Mississippi, Oklahoma, Pennsylvania, and Texas. Kentucky was previously missing in 2020 but reported sufficient data in 2024; Maryland is newly missing in 2024.

Second, the residual vote rate can be influenced by whether states publish tabulations of write-in votes. States that allow but do not publish write-in votes for president can have a higher residual vote calculated for them than is warranted. Therefore, special care was

taken to ensure that write-in votes were included in the residual vote calculations reported here.

The most serious criticism of the residual vote rate is that it conflates undervotes caused by conscious abstention and inadvertent mistakes. Based on research utilizing various data sources, it appears that 0.5 to 0.75% of voters abstain from voting for the office of president each presidential election cycle.[41] The statewide residual vote rate has rarely dipped below 0.5%; only two states had residual vote rates below this benchmark in both 2012 and 2016, for instance.[42]

Despite the fact that one state, Nevada, had an especially low residual vote rate in 2016, the nationwide average residual vote rate in 2016 rose significantly compared to recent years. Among states that report the necessary information to calculate it, the residual vote rate rose to 1.4% in 2016, compared to 1.05% over the three presidential elections from 2004 to 2012.[43] Given the way the residual vote rate indicator is constructed, by normalizing the score between the historical high and low values, a state that experienced an "average" increase of the residual vote rate in 2016 of 0.35 points over 2012 will see a decline in this indicator of 9.1 points. Furthermore, given how the overall EPI is constructed, a state that otherwise keeps up with the other states in terms of performance, but sees an average increase in the residual vote rate because of increased abstentions, will see a decline in the index score.

It can be argued that to penalize a state when more of its voters abstain in an election is unfair. At the same time, the fact that Nevada had a historically low residual vote rate in 2016, despite an increase in abstentions, is evidence that states can choose policies that will make it less likely that the residual vote rate will be contaminated by a surge in abstentions. In particular, since the 1970s Nevada has given voters the option to choose "none of these candidates" in presidential elections. In 2016, the percentage of Nevadans choosing this option increased to 2.56%, compared to 0.57% in 2012. Its residual vote rate ended up declining from 0.17% to 0.004%.

Finally, in calculating the residual vote rate for a state, counties that reported more votes for president than total turnout were excluded.

5.14.3 *Stability of rates across time*

We begin by comparing residual vote rates, measured at the county level, for 2008, 2012, 2016, 2020, and 2024. The raw data exhibit a pronounced right skew. That is, most counties have very low residual vote rates, while a few have relatively high rates. This is illustrated in the histograms in Figure 26, which show the distribution of residual vote rates in 2008, 2012, 2016, 2020, and 2024 for each county for which we have the relevant data.

Because of this pronounced right skew, any scatterplot that compares values from one year to another will be misleading in that the bulk of observations will be clumped around the origin, with our eye drawn toward the small number of outliers with extremely large values. To deal with this pronounced right skew, it is common to transform the measures by taking logarithms. One problem this creates is that some counties (especially small ones) had zero residual votes in particular years, and the logarithm of zero is undefined. Therefore, in the scatterplot in Figure 27, counties with zero residual votes have been set to 0.00001, which is slightly below the lowest nonzero residual vote rate that was actually observed. Finally, so that the influence of larger counties is visually greater than that of smaller counties, we weight the data tokens in proportion to the size of the county.

As Figure 27 illustrates, for counties that reported the data necessary to calculate residual vote from 2008 to 2024, residual vote rates are related to a moderate degree from one election to the next. The correlations in rates between consecutive election pairs are much greater than in earlier election pairs, which likely reflects the fact that localities have settled into a stable set of voting machines, following the rapid upgrading of machines immediately after the 2000 presidential election.

The EPI reports residual vote rates at the state level. The statewide residual vote rates are not especially right-skewed; therefore, Figure 28 represents the comparison of residual vote rates using raw percentages rather than logged ones. As with the measures calculated at the county level, the indicator calculated at the state level is fairly stable when we compare across years. The nationwide average residual vote rate in 2024 was 1.06%, a modest increase from 0.89% in 2020, but well below the notable spike to 1.42% in 2016.

Figure 26: Residual Vote Rate by County

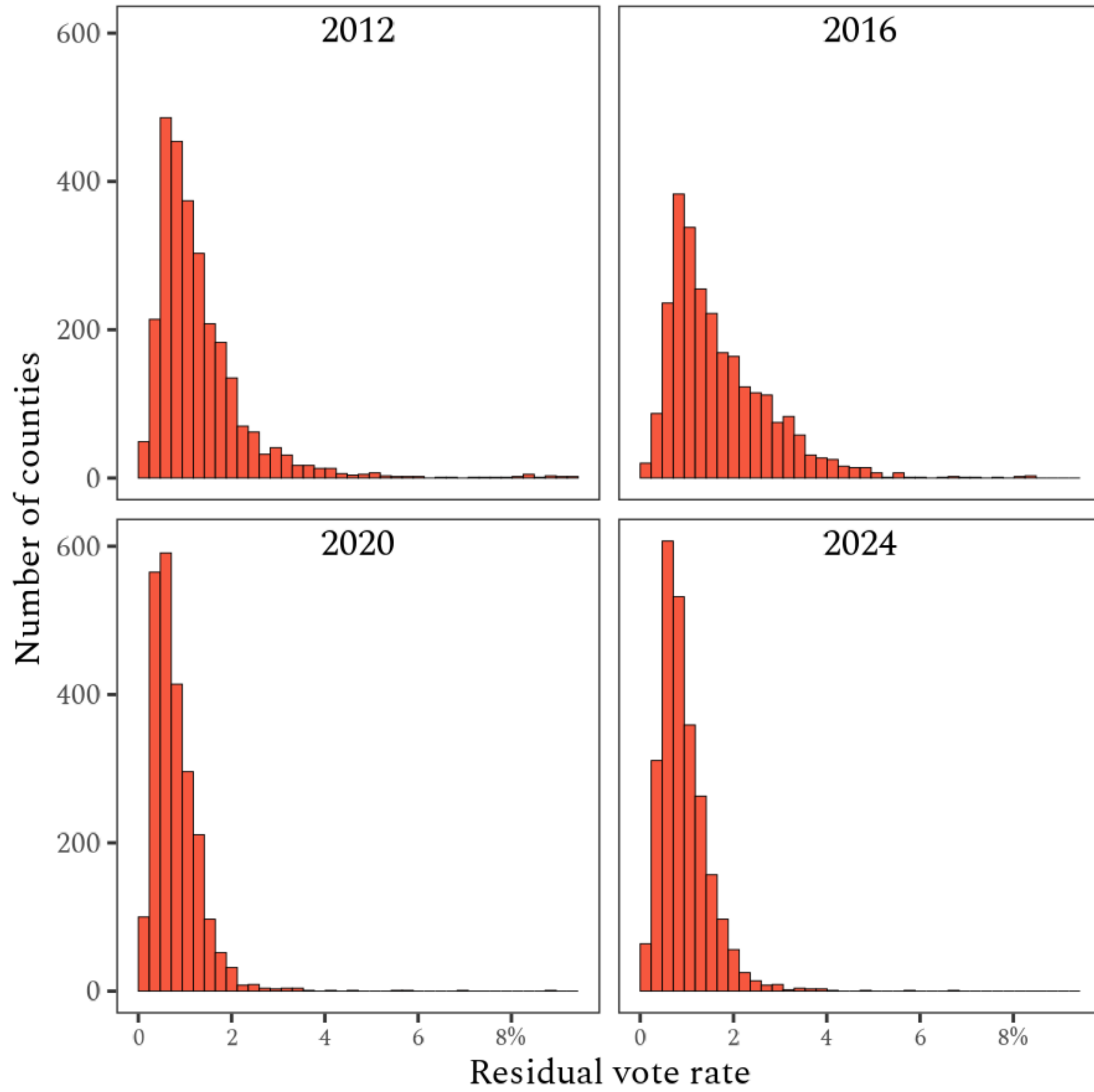


Figure 27: Logged Residual Vote Rate by County

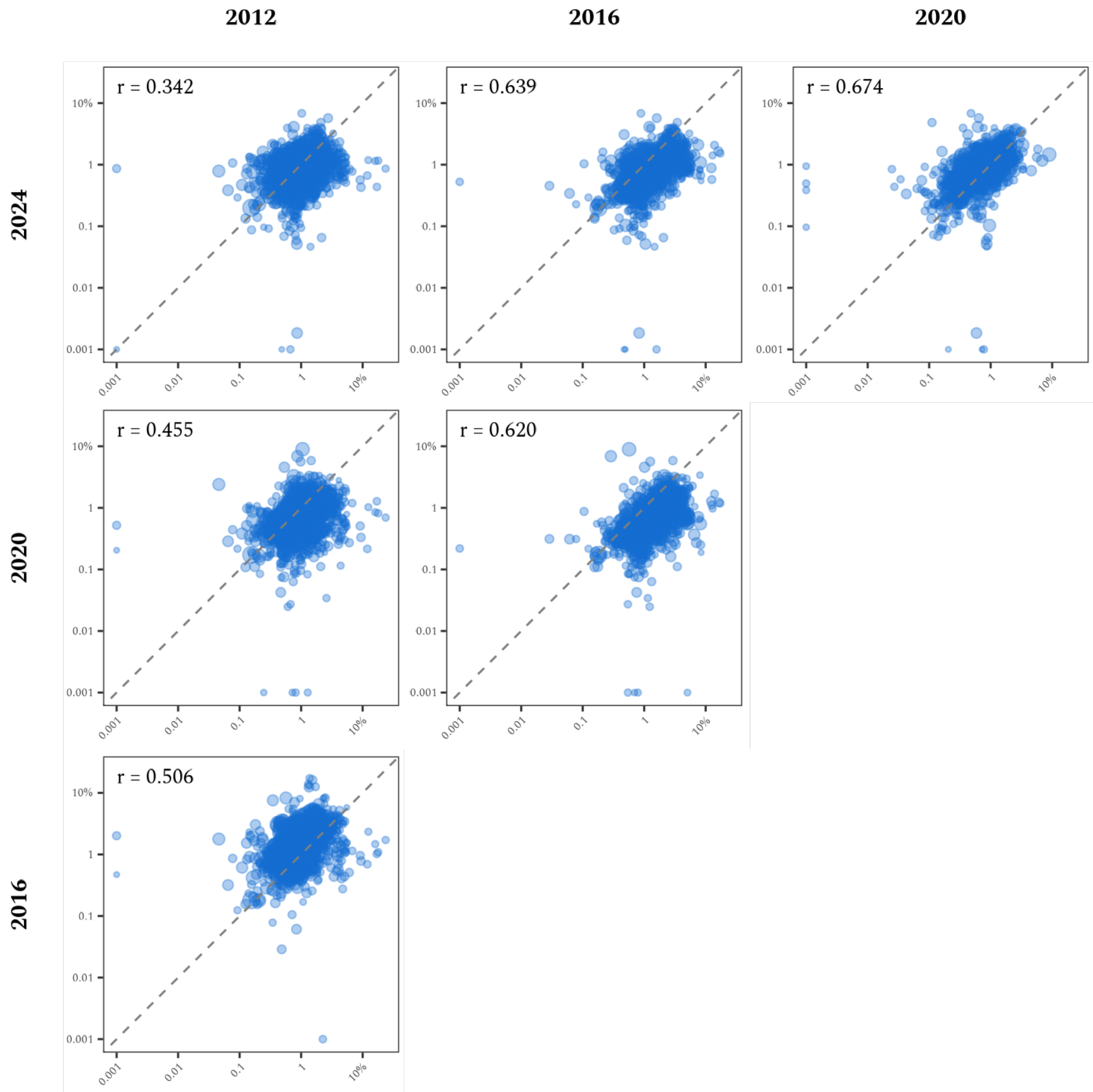
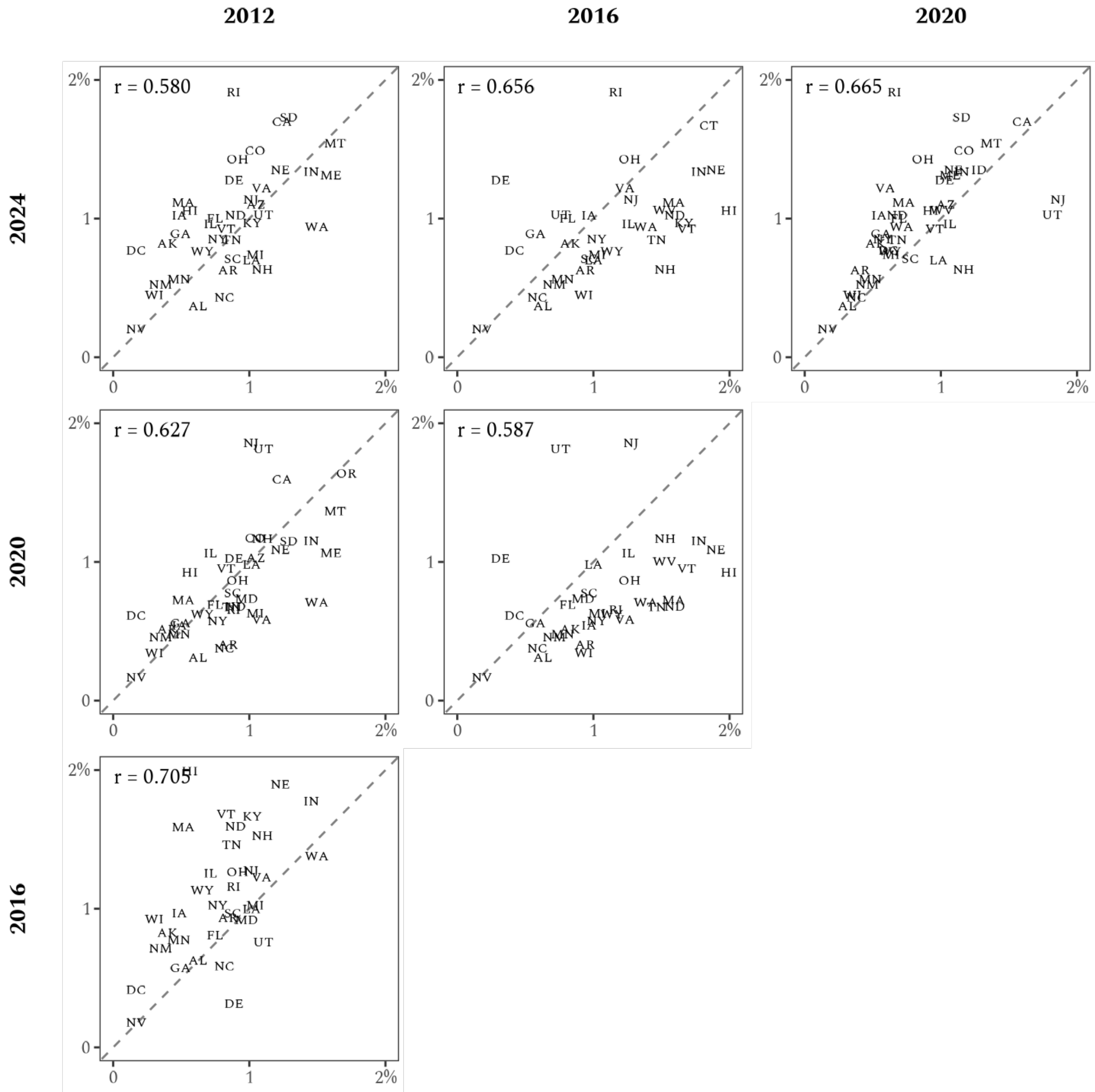


Figure 28: Residual Vote Rate by State



5.15 Risk-limiting audits (2020-)

5.15.1 *Data source*

National Conference of State Legislatures and state election offices

In recent years, increased scrutiny has been given to the quality of post-election audits, including, among other things, their methodology for ballot selection and sample size. Risk-limiting audits are a ballot-level audit that tests the outcome at a given precinct based on a sample of ballots and includes methods for escalation of the sample up to a full manual recount.[44] The escalation test is determined by the likelihood that a selection of more ballots would overturn the election results. Ever since risk-limiting audits were introduced, numerous states have piloted risk-limiting audits, allowed counties to conduct them as an alternative to traditional audits, and a few have mandated them statewide. For this indicator, states that mandate risk-limiting audits statewide in statutes are coded at the highest value, while states that do not conduct risk-limiting audits are coded as missing. The effect of this coding is to reward states in score and rank for having risk-limiting audits, but not penalize states for not adopting the auditing method.

5.16 Turnout

5.16.1 *Data source*

University of Florida Election Lab[45]

Perhaps the most highly visible measure of the health of elections is the turnout rate—that is, the percentage of eligible voters who vote. A very large body of academic literature exists on the factors that cause turnout rates to rise and fall, the classic study being *Who Votes?* by Raymond E. Wolfinger and Steven J. Rosenstone.[46]

The most powerful predictors of who will turn out are demographic, most notably education and income. However, the presence of certain registration laws has been shown to affect turnout, as demonstrated by Wolfinger and Rosenstone and those who have followed in their footsteps.

5.16.2 *Coding convention*

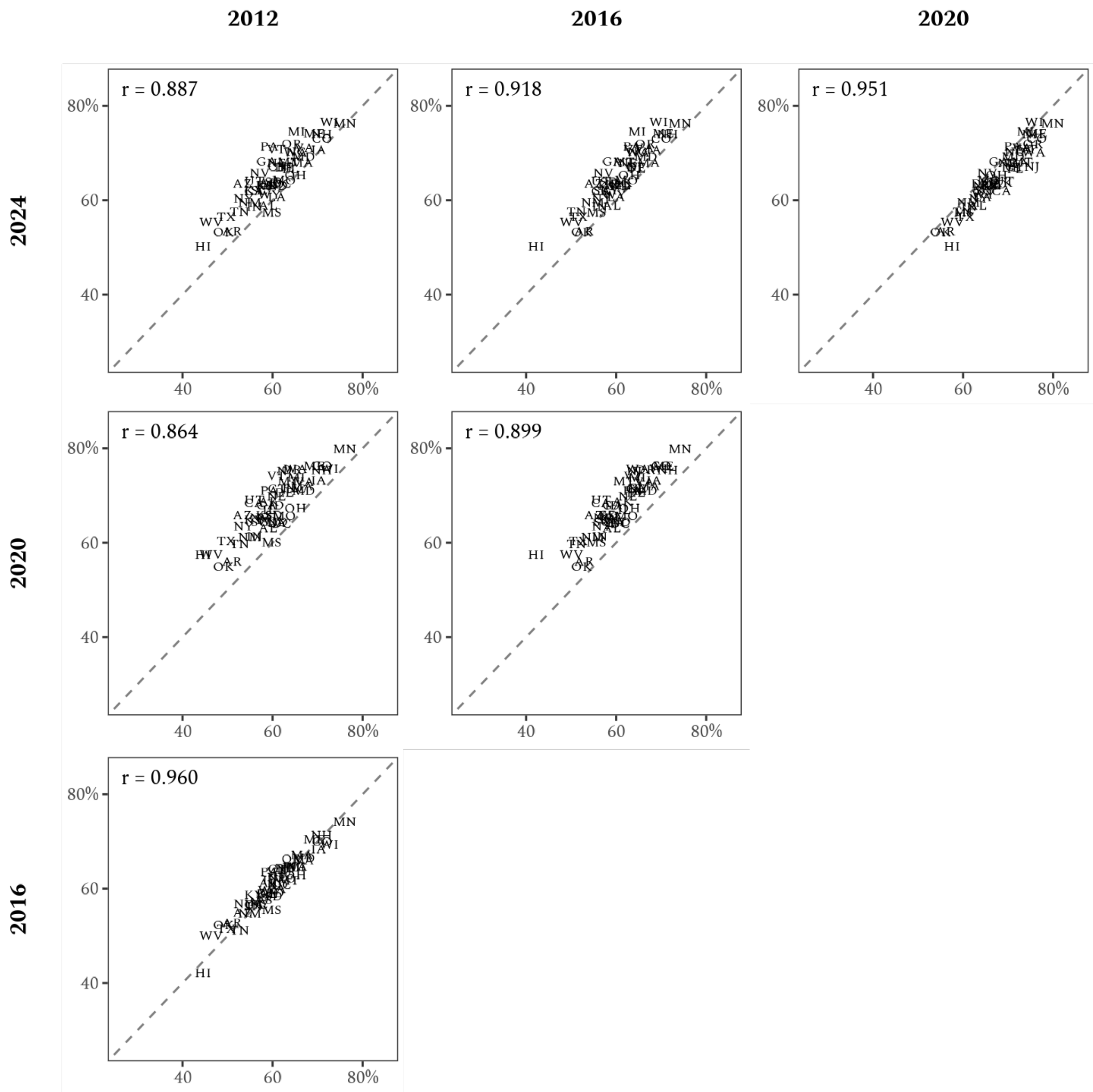
This indicator is based on data collected by the University of Florida's Michael McDonald and reported on the United States Elections Project website. The measure of the numerator, turnout, is based on one of two factors. First, for states that report actual turnout, this figure is used. For states that do not report actual turnout, turnout is estimated by taking the number of votes cast for the statewide office receiving the most votes in an election. In presidential election years, this is almost always the presidential election. In midterm election years, this is most often the gubernatorial or U.S. Senate election.

The denominator is voting-eligible population (VEP) as calculated by McDonald. VEP is an improvement on the voting-age population (VAP), which has long been reported by the Census Bureau. While VAP has the virtue of being easily calculated from Census Bureau reports, it is flawed because it includes individuals of voting age who are ineligible to vote, notably convicted felons (in most states) and noncitizens (in all states). Failure to account for ineligible voters among the voting-age population causes the turnout rate to be depressed, because the denominator is too large.

5.16.3 *Stability of rates across time*

The graphs in Figure 29 show the turnout rate for all states in the 2008, 2012, 2016, 2020, and 2024 elections plotted against each other. Turnout rates are highly correlated across election cycles, reflecting the stability of underlying state-level factors that drive participation. The national average VEP turnout rate fell modestly in 2024 to 65.0%, down from the 2020 high of 67.9%, but above the rates seen in 2012 and 2016.

Figure 29: Turnout Rate by State



5.17 Voter registration rate

5.17.1 *Data source*

Voting and Registration Supplement of the Current Population Survey

In nearly every state, the most basic requirement for voting, once age and citizenship requirements have been met, is registering to vote. Voter registration started becoming common in the late 19th century but often applied only to larger cities and counties in a state. By the 1960s, however, universal registration requirements had become the norm across the United States. Today, only North Dakota does not require voters to register, although it maintains a list of voters, to help with the administration of elections.

If being registered to vote is a prerequisite to voting, then the percentage of eligible voters on the rolls is an important measure of the accessibility of voting. Registration rates vary across the states due to a combination of factors, related to the demographic characteristics of voters and to state registration laws. Although registration is necessary for most Americans to vote, little academic research has been done to explain why individuals register to vote; most studies focus on why registered voters turn out. An important exception is research by Glenn Mitchell and Christopher Wlezien.[47] Their study confirms that the factors influencing turnout are very similar to those influencing registration. Another study finds that the act of registration itself may stimulate turnout;[48] therefore, it is not surprising that the same factors will be found to influence both.

One factor hindering the direct study of voter registration rates, as opposed to using turnout as a proxy, is the inflated nature of voter registration lists. Official lists tend to overreport the number of registered voters because of the lag between the time when registered voters die or move out of state and when those events are reflected in the voter rolls. States differ in their method and frequency of removing dead registrants from the rolls, and many states do not have effective methods for definitively identifying voters who move out of state.[49]

The failure to immediately remove registered voters who have moved or died means that not only will registration rolls generally contain more names than there are actual registrants in a state, but the degree to which the rolls contain "deadwood" will depend on the frequency and diligence of registration roll maintenance across states.

The number of people on voter registration rolls will sometimes exceed the number of eligible voters in a state. In the EAVS 2020 Comprehensive Report issued by the EAC, for instance, Alaska, Illinois, Maine, and New Hampshire reported more active registrants than the estimated eligible population (Appendix A: Descriptive Tables, Voter Registration Table 1: Registration History). The active registration rate as a percent of the Citizen Voting Age Population of these states are 111.7% in Alaska, 100.2% in Illinois, 105.2% in Maine, 101.6% in New Hampshire.

Because of the high variability in the manner in which voter registration lists are maintained, an alternative technique was used to estimate voter registration rates, relying on responses to the Voting and Registration Supplement of the Current Population Survey.

As shown below, registration rates calculated using the VRS are more stable over time than those calculated using official state statistics. This does not overcome the problem of overestimating registration rates due to inaccurate responses. However, under an assumption that respondents in one state are no more likely to misreport their registration status than residents of any other state, the registration rates calculated using the VRS are more likely to accurately reflect the relative registration rates across states than are the rates calculated using official reports.[50]

5.17.2 *Coding convention*

This indicator is based on responses to the VRS of the Census Bureau's CPS. It is based on a combination of three variables:

- **PES1:** In any election, some people are not able to vote because they are sick or busy or have some other reason, and others do not want to vote. Did (you/name) vote in the election held on Tuesday, [date]?
- **PES2:** [Asked of respondents who answered no to PES1] (Were you/Was name) registered to vote in the (date) election?
- **PES3:** [Asked of respondents who answered no to PES2] Which of the following was the MAIN reason (you/name) (were/was) not registered to vote?

Registered voters are those who answered yes to PES1 or PES2 (the latter if the respondent answered no to PES1). In addition, respondents were removed from the analysis if they answered "not eligible to vote" to PES3 as the reason they were not registered.[51]

Using the combined answers to these three questions allows one to estimate the percentage of eligible voters in each state who are registered. North Dakota has been removed from this measurement because its citizens are not required to register in order to vote.

5.17.3 *Stability of rates across time*

Figure 30 shows the estimated registration rate (using the VRS data) for all states across all election cycles from 2008, 2012, 2016, 2020, and 2024. The high interyear correlations show that this method produces estimates of voter registration rates that are reliable across time. The national average registration rate in 2024 was 87.1%, essentially unchanged from 87.3% in 2020, and above the rates seen in presidential elections prior to 2020.

Figure 30: Registration Rate by State

5.18 Voting information lookup tool availability

5.18.1 *Data source*

Pew's *Being Online is Not Enough* (2008), *Being Online is Still Not Enough* (2011), and *Online Lookup Tools for Voters* (2013), updated by MEDSL research staff since 2016.

Americans have incorporated the internet into their daily lives; elections are no exception. These indicators measure whether citizens can find the official election information they need online. Websites that quickly and easily deliver the information citizens seek about an upcoming election can improve the voting experience and ease the burden placed on election officials' limited resources.

For 2008, this indicator combines two measures: whether state election sites have voter registration verification and whether they have polling place locators. Both indicators are binary in nature and can be summed to create a score ranging from a minimum of 0 to a maximum of 2. For a state to receive credit for having any website tool, the resource must be a statewide tool available through an official state website such as the secretary of state's, and it must have been available before the 2008 election.

In 2010, the examination of online tools for the EPI expanded to five measures, including the two from 2008 (voter registration verification and polling place locators). The new measures were whether state election sites let voters see their precinct-level sample ballots, whether absentee voters can check their ballot status online, and whether voters issued provisional ballots can check their ballot status online. The five indicators are binary and can be summed together to create a score ranging from 0 to 5. As in 2008, for a state to receive credit for having any website tool, the resource must be a statewide tool available through an official state website such as the secretary of state's, and it must have been available before the election being scored.[52]

5.19 Voting wait time

5.19.1 *Data source*

Survey of the Performance of American Elections / Cooperative Election Study

The time voters wait to cast ballots is a highly visible measure of voting convenience. Although long lines can indicate excitement surrounding an election, significant variation in polling place lines across communities can suggest the presence of factors that make it easier or harder for some to vote. Long lines at the polls became so politically salient that President Barack Obama appointed the Presidential Commission on Election Administration following the 2012 election, citing stories of hours-long waiting times in that election as the motivation.

5.19.2 *Coding convention*

In 2008 and 2012 the wait time indicator was based solely on answers to a question in the Survey of the Performance of American Elections that was asked of all voters who cast a ballot in person, either on Election Day or during early voting. The question asked was: "Approximately how long did you have to wait in line to vote?" Answers to the question are given as intervals by respondents. We recoded the responses to the midpoint of the respective interval. Table 34 shows the resulting average wait times by state.

Table 34: Average Wait Times to Vote by State (minutes)

State	**2020**	**2022**	**2024**
AK	11.32	3.66	20.54
AL	19.68	2.56	16.13
AR	9.02	7.55	7.97
AZ	4.49	7.06	7.02
CA	4.08	3.54	9.08
CO	0.76	2.08	4.78
CT	8.80	2.71	7.89
DC	3.47	9.97	6.30
DE	32.53	5.10	17.68
FL	14.27	6.32	9.18
GA	23.20	9.71	11.00
HI	0.11	3.02	4.52
IA	6.89	3.75	6.95
ID	6.06	7.24	9.16
IL	9.23	5.57	11.95
IN	42.07	6.14	21.20
KS	6.36	4.30	6.64
KY	5.06	8.67	15.10
LA	15.61	4.32	6.71
MA	3.54	2.00	4.94

Table 34: Average Wait Times to Vote by State (minutes)

State	2020	2022	2024
MD	16.37	4.52	10.71
ME	5.68	2.58	7.85
MI	9.42	3.70	8.16
MN	10.97	3.36	6.75
MO	19.68	4.99	15.58
MS	16.87	4.11	8.22
MT	1.29	1.48	7.87
NC	15.30	4.55	20.49
ND	7.48	9.11	9.82
NE	5.36	2.46	6.87
NH	9.62	4.18	11.43
NJ	1.59	5.47	11.74
NM	22.45	3.77	9.97
NV	15.41	8.52	8.45
NY	16.78	8.45	13.19
OH	14.11	4.14	13.40
OK	32.32	7.51	19.63
OR	0.77	1.11	2.51
PA	16.63	2.97	11.18
RI	8.33	2.62	3.67
SC	34.13	9.23	18.42
SD	5.23	4.32	5.92
TN	18.97	10.90	13.89
TX	13.71	9.46	18.88
UT	3.46	2.50	7.68
VA	13.31	2.48	7.66
VT	2.27	1.34	3.13
WA	0.48	2.25	5.76
WI	6.84	6.94	10.27
WV	11.72	6.25	10.62
WY	7.84	3.92	17.55

The survey contained an open-ended question for those answering "more than 1 hour," requesting the respondent to supply the exact amount of time spent waiting in line. For those who supplied an exact time, we recoded the response to reflect the exact time. For the remaining respondents, we recoded the waiting time answer to be the mean of all the respondents who gave the "more than 1 hour" answer in that particular election year.

Beginning with 2014, the SPAE began asking respondents who had voted "by mail" whether they had returned their ballot in person, or had taken it to a physical location and dropped it off. These voters were asked the following question: "Once you got to where you dropped off your ballot, how long did you have to wait before you could deposit your

ballot and leave?" The response categories were the same as those used for in-person voting.

Starting in 2014, we combine the answers from the in-person wait time question and the mail wait time question to create a wait time measure for five states where voting is now predominantly via mail: Colorado, Oregon, Washington, Utah, and Hawaii.

5.19.3 *Reliability of the measure*

Reliability pertains to the ability of a measure to be estimated consistently, when measured at different times or using different methods. The SPAE was first conducted for the 2008 presidential election, then again in 2012, 2014, 2016, 2020, and 2024; it was not conducted for the 2010 and 2018 midterm elections. Therefore, the ability to test the reliability of the measure using only the SPAE is limited, but growing. Because of the policy interest in the length of waiting times at the polls, we have used other data sources, in addition to the SPAE, to gauge the reliability of this measure. The "waiting time" question was originally asked on the 2006 Cooperative Congressional Election Study (CCES) and asked again in 2008, 2012, 2014, 2016, 2018, 2020, and 2024. This allows us to use responses to the CCES to augment our exploration of this measure's reliability. We begin with the SPAE responses in 2008, 2012, 2016, 2020, and 2024. The average wait time to vote exhibits a strong right skew for 2008, 2012, 2016, 2020, and 2024. Because of the right skew in the distribution of wait times, any scatterplot that compares values across two years will be misleading in that the bulk of observations will be clumped around the origin, with our eye drawn toward the outliers with extremely large values. To deal with this right skew, it is common to transform the measures by taking logarithms. Figure 31 shows the scatterplot among states from the 2008, 2012, 2016, 2020, and 2024 SPAE wait time estimates, plotting the variable on log scales.

The Pearson correlation coefficient describing the relationship between the five years ranges from 0.03 to 0.73. The strongest correlation, 0.73, is between 2008 and 2016. The weakest correlation, 0.03, is between 2012 and 2024. The correlation between 2020 and 2024 is 0.69, suggesting that recent election cycles exhibit relatively consistent patterns of wait times across states.

The wait time question was also asked in the 2008, 2012, 2014, and 2016 CCES, which allows us to compare results obtained across two different surveys (the SPAE and the CCES) at the same time. The scatterplots in Figure 32 show the different estimates from these two surveys, again after taking the logarithm of both variables. The Pearson correlation coefficient describing the relationship between the methods are very high, especially for the presidential election years. The correlation for the 2016 data is 0.761.

Finally, following the 2014 election, the North Carolina State Board of Elections (NCSBOE) conducted a survey of its county election officials, asking for the experiences of counties with voter wait times in 2014.[53] The NCSBOE summarized the wait time information they received back into three categories, 0-30 minutes, 30-60 minutes, and 60+ minutes. The appendix to the report issued by the NCSBOE indicated the distribution of in-person wait times in each county, for both Election Day and early voting.

It so happens that in 2014, the SPAE conducted a special study of 10 states, in which an additional 1,000 respondents were surveyed (in addition to the standard SPAE study). North Carolina was included in this "oversample" study. Combining responses from the oversample study with responses from the regular administration of the SPAE means that we had 1,200 respondents from North Carolina in 2014. This large number of observations allows us to break down responses to the SPAE survey questions into smaller units, such as counties.

Table 35 reports a cross-tabulation of responses given by county officials about how long the lines were to vote in their counties (along the rows), associated with the answers given by SPAE respondents to how long they waited to vote (along the columns). For instance, 136 SPAE respondents lived in a county in which county officials reported that early voting waits were "0-30 minutes." (See the first row of the early voting table.) Among the 136 respondents who lived in one of these counties, 55.4% reported not waiting at all to vote, 33.4% waited less than 10 minutes, 12.3% for 10 to 30 minutes, 0.9% for 31 minutes to 1 hour, and no respondents reported waiting more than one hour to vote. Note that as a general matter, the SPAE respondents who reported that they waited the longest to vote, either in early voting or on Election Day, came from counties in which election officials reported the longest wait.

The consistency of results across years and across different research efforts is evidence of the validity of the question.

5.19.4 *Validity of the measure*

Average wait time is one measure of the ease of voting. On its face, the less time a voter waits to cast a ballot, the more convenient the experience.

Table 35: Wait Times to Vote in North Carolina in 2014 (SPAE)

Election Day						
NC SBOE category	Not At All	Less than 10 min.	10- 30 min.	30 min - 1hr.	More than an 1 hr.	N
0-30 min.	44.0%	35.1%	20.3%	0.6%	0.0%	128
30-60 min	35.9%	42.7%	14.7%	4.2%	2.5%	97
60+ min	27.0%	37.2%	26.4%	7.9%	1.6%	235
Total	33.6%	37.9%	22.0%	5.1%	1.4%	460
Early Voting						
0-30 min.	55.4%	33.4%	12.3%	0.9%	0.0%	136
30-60 min	32.8%	37.4%	19.8%	8.8%	1.2%	114
60+ min	13.9%	31.7%	31.3%	18.2%	4.9%	175
Total	31.9%	33.8%	22.0%	10.0%	2.3%	425

However, one issue that might challenge the validity of this measure is whether survey respondents correctly recall how long they waited in line to vote. Thus far, there have been no studies that relate perceived time waiting in line with actual waiting time. However, the psychological literature on time perception is considerable. A 1979 literature review on time perception by Lorraine Allan, a professor at McMaster University, concluded that, in general, the relationship between perceived and actual time is linear, although the actual parameters describing the relationship vary across settings.[54] These results suggest that respondents who report waiting in line longer actually did wait in line longer, and that the averages of self-reported waiting times of different groups (based on race, sex, state of residence, and so on) in the survey are likely to reproduce the same relative ranking of the waiting times that were actually experienced by members of those groups.

Figure 31: Wait Times by State

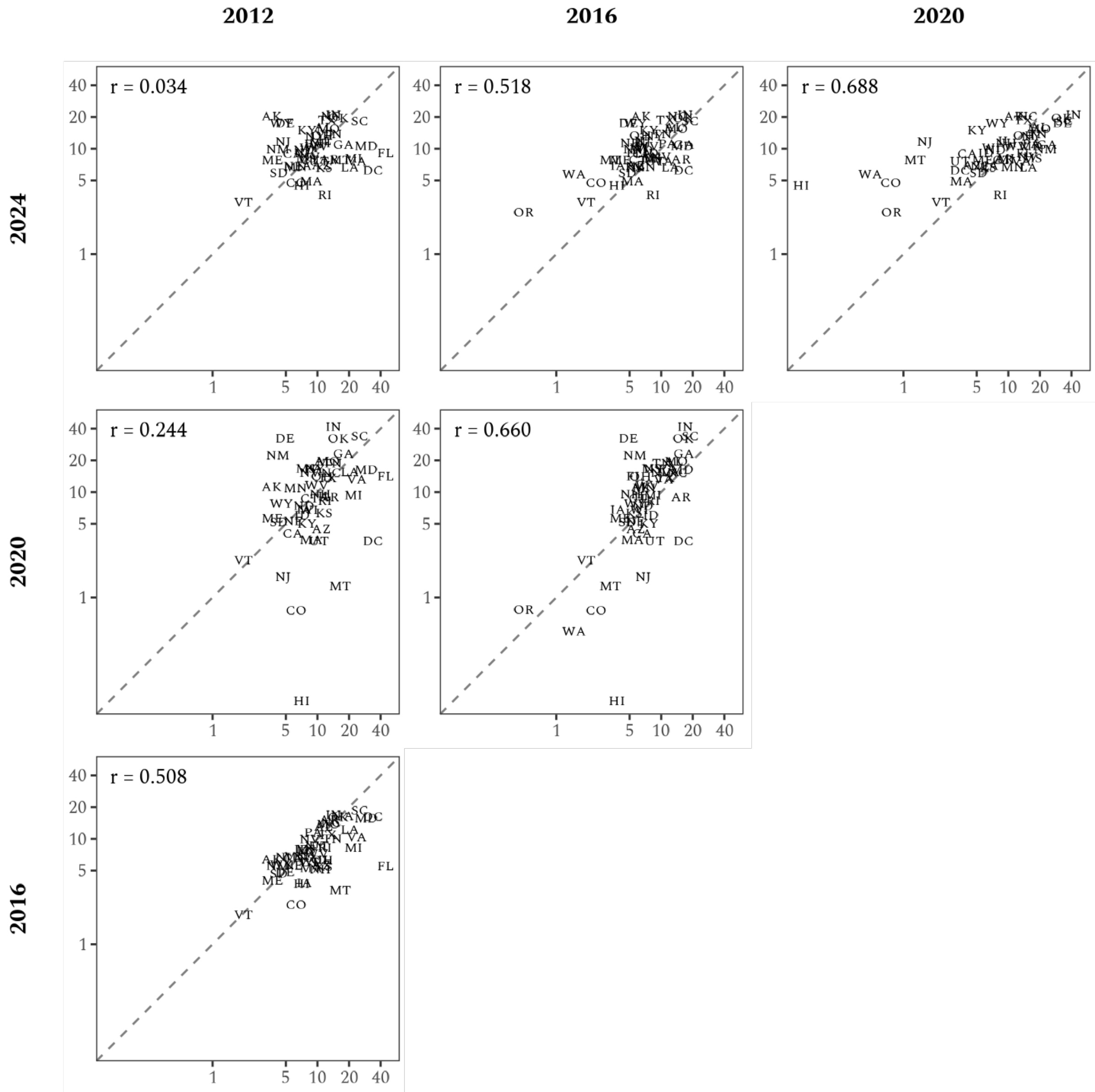
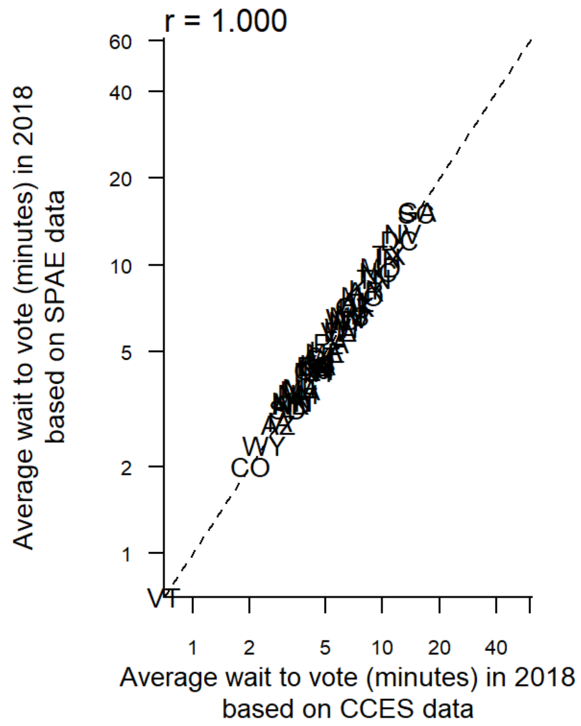


Figure 32: Wait Times by State: SPAE and CCES Compared



6 Advisory Board

Since the MIT Election Lab took over long-term management of the index, the Lab's own board of advisors continues to provide guidance through each new iteration of the index. However, neither they nor their organizations necessarily endorse its findings or conclusions.

Table 36: MIT Election Data and Science Lab Board of Advisors

Board Member	Title	Institution
James Alcorn	Partner, Cooley LLP; Adjunct Professor of Law	William & Mary Law School
Pam Anderson	Former Clerk and Recorder; Executive Director	Colorado County Clerks Association
Stephen Ansolabehere	Frank G. Thompson Professor of Government	Harvard University
Lonna Rae Atkeson	LeRoy Collins Eminent Scholar and Professor of Political Science	Florida State University
Barry Burden	Professor of Political Science; Director, Elections Research Center	University of Wisconsin–Madison
Matthew Damschroder	Director	Ohio Department of Job and Family Services
Lori Edwards	Supervisor of Elections	Polk County, FL
Heather Gerken	Sterling Professor Emeritus of Law; President	Yale Law School; Ford Foundation
Paul Gronke	Professor of Political Science; Director, Elections & Voting Information Center (EVIC)	Reed College
Kathleen Hale	Professor Emerita; Executive Director	Auburn University (Emerita); The Election Center
Carder Hawkins	Chief Strategy Officer	Winthrop Rockefeller Institute
Kevin Kennedy	Former Director and General Counsel	Wisconsin Government Accountability Board
David Kimball	Professor of Political Science	University of Missouri–St. Louis
Jan Leighley	Professor of Government	American University
John Lindback	Former Executive Director; Senior Advisor	ERIC; Center for Secure and Modern Elections
Dean Logan	Registrar-Recorder / County Clerk	Los Angeles County
Christopher Mann	Research Director	Center for Election Innovation & Research (CEIR)
Joseph Mansky	Former Elections Manager	Ramsey County, MN
Conny McCormack	Elections Consultant	Independent
Ann McGeehan	General Counsel	Texas County & District Retirement System (TCDRS)
Amber McReynolds	Chair, Board of Governors	United States Postal Service
Brian Newby	Broadband Program Director	State of North Dakota
Don Palmer	Commissioner	U.S. Election Assistance Commission (EAC)

Table 36: MIT Election Data and Science Lab Board of Advisors

Board Member	Title	Institution
Tammy Patrick	Chief Programs Officer	The Election Center
Nathaniel Persily	James B. McClatchy Professor of Law	Stanford Law School
Peggy Reeves	Former Director of Elections	Connecticut Secretary of State's Office
Angie Rogers	Former Commissioner of Elections	Louisiana Department of State
Kathleen Scheele	Former Director of Elections	Vermont Secretary of State's Office
Daron Shaw	Professor of Government; Frank C. Erwin, Jr. Chair of State Politics	University of Texas at Austin
Charles Stewart III	Kenan Sahin Distinguished Professor of Political Science	MIT
Christopher Thomas	Former Director of Elections	Michigan
Daniel Tokaji	Fred W. & Vi Miller Dean and Professor of Law	University of Wisconsin Law School
Kim Wyman	Senior Fellow	Bipartisan Policy Center

Members of the initial advisory council, convened by Pew, were instrumental in conceptualizing the Elections Performance Index. However, neither they nor their organizations necessarily endorse its findings or conclusions.

Table 37: Initial Elections Performance Index Advisory Council

Board Member	Title	Institution
Lonna Rae Atkeson	LeRoy Collins Eminent Scholar and Professor of Political Science; Director, LeRoy Collins Institute	Florida State University
Barry Burden	Professor of Political Science; Director, Elections Research Center	University of Wisconsin–Madison
Lori Edwards	Supervisor of Elections	Polk County, FL
Edward Foley	Ebersold Chair in Constitutional Law	Moritz College of Law, OSU
Bernard Fraga	Ann and Michael Hankin Distinguished Professor of Political Science	Emory University
Amanda Grandjean	Director of Elections and Deputy Assistant Secretary of State	Ohio Secretary of State
Paul Gronke	Professor of Political Science; Director, Elections & Voting Information Center (EVIC)	Reed College
Kathleen Hale	Professor Emerita; Executive Director, The Election Center	Auburn University (Emerita)
Kevin Kennedy	Former Director and General Counsel	Wisconsin Government Accountability Board
Jan Leighley	Professor of Government	American University
Dean Logan	Registrar-Recorder / County Clerk	Los Angeles County
Christopher Mann	Research Director	Center for Election Innovation & Research (CEIR)

Table 37: Initial Elections Performance Index Advisory Council

Board Member	Title	Institution
Amber McReynolds	Chair, Board of Governors	United States Postal Service
Don Palmer	Commissioner	U.S. Election Assistance Commission (EAC)
Tammy Patrick	Chief Programs Officer	The Election Center
Peggy Reeves	Former Director of Elections	Connecticut Secretary of State's Office
Daron Shaw	Professor of Government; Frank C. Erwin, Jr. Chair of State Politics	University of Texas at Austin
Michelle Tassinari	First Deputy Secretary of the Commonwealth and General Counsel	Massachusetts Secretary of State
Christopher Thomas	Former Director of Elections; Consultant	Michigan; City of Detroit
Michael Winn	Chief Deputy of Administration	Harris County Clerk's Office, Texas

7 Endnotes

[1] *The Measure of American Elections.* Eds. Barry C. Burden and Charles Stewart III (New York: Cambridge University Press, 2014).

[2] Heather K. Gerken. *The Democracy Index: Why our Election System Is Failing and How to Fix It* (Princeton University Press, 2009).

[3] In doing this brainstorming, it immediately became apparent that some indicators could arguably occupy different cells in the table.

[4] Environmental Performance Index, http://epi.yale.edu

[5] County Health Rankings & Roadmaps, http://www.countyhealthrankings.org

[6] The World Justice Project Rule of Law Index, http://worldjusticeproject.org/rule-of-law-index

[7] Kids Count Data Center, http://datacenter.kidscount.org

[8] In developing the EPI, alternative aggregation methods were considered with the advisory committee, including differential weights and data-reduction approaches (e.g., factor analysis). The group chose simple averages as the most robust and transparent method, especially given nontrivial missing data. As election-administration research and data coverage improve, future work may support alternative aggregation schemes or subindexes.

[9] We treated a state as missing for an indicator unless reporting counties covered at least 85% of registered voters (or voting-age population in North Dakota which does not have voter registration). This threshold limits the influence of non-reporting counties, so reported values are not driven by missing data. States with more than 15% missing (registration-weighted) were excluded rather than reported with potentially unstable estimates.

[10] This is a change from the very first iteration of the EPI. In the first version, we normalized values over 2008 and 2010 together. However, given that midterm and presidential election years behave differently, it made sense to create separate presidential and midterm election scales. One consequence of this re-scaling between presidential and midterm years is that some of the overall EPI averages and rank order of states from 2008 and 2010 may be slightly different from in the original release.

[11] The primary alternative to this approach that we considered was to rank all states for which we had data and then place those states missing data immediately below the state with the lowest ranking. We decided against this strategy for two reasons. First, to do so would overly weight the consideration of missing data in the index. The EPI already has one indicator of the completeness of election administration data that was reported, and it seemed excessive to have this measure intrude into the other measures. Second, after simulating different results that varied different rules about handling states with missing data, we discovered that placing states with missing data tended to elevate the ranking of states with a lot of missing data, which would entirely undo the effect of the data-completeness measure.

[12] A high percentage of respondents are "informants," that is, respondents within a household who report about the voting behavior of the individual in question.

[13] U.S. Election Assistance Commission. *2024 Election Administration and Voting Survey Comprehensive Report* (2025), https://www.eac.gov/sites/default/files/2025-07/2024_EAVS_Report_508.pdf

[14] Wisconsin Elections Commission. 2025. "2024 General Election Voting and Registration Statistics Report." https://elections.wi.gov/resources/statistics/2024-general-election-voting-and-registration-statistics-report.

[15] As fully vote-by-mail states that do not offer in-person election day voting, Oregon and Washington are not penalized for missing this survey item in EAVS.

[16]All states are considered to have offered some form of in-person early voting as stated on pg. 11 of the EAVS 2024 Comprehensive Report. In-person absentee ballots cast before Election Day (with or without an excuse) are considered to be a form of in-person early voting.

[17]Government Accountability Office. *Voters With Disabilities: Additional Monitoring of Polling Places Could Further Improve Accessibility.* GAO-09-941 (September 2009), https://www.gao.gov/assets/gao-09-941.pdf

[18]Lisa Schur and Douglas Kruse. *Disability and Voter Turnout in the 2020 Elections.* Report submitted to the U.S. Election Assistance Commission (February 2021), https://www.eac.gov/sites/default/files/document_library/files/Fact_sheet_on_disability_and_voter_turnout_in_2020_0.pdf

[19]Lisa Schur, Douglas Kruse, Mason Ameri, and Meera Adya. *Disability and Voting Accessibility in the 2022 Elections.* Report submitted to the U.S. Election Assistance Commission (July 2023), https://www.eac.gov/sites/default/files/2023-07/EAC_2023_Rutgers_Report_Supplement_FINAL.pdf

[20]MIT Election Data + Science Lab. *2020 EPI Methodology Report* (2022), https://elections-blog.mit.edu/sites/default/files/2022-03/2020_EPI_Methodology.pdf

[21]These figures are taken from the 2024 Election Administration and Voting Survey Report issued by the U.S. Election Assistance Commission, Table 1. The percentages quoted here for rejection rates due to late arrival and signature problems are clearly underestimates, because about 18% are attributed to an "other" or "not categorized" category.

[22]The correlation coefficient was calculated on the logged values, weighting each county by its number of registered voters.

[23]According to the 2012 Election Administration and Voting Survey issued by the Election Assistance Commission, at least 1.4% of rejected provisional ballots were because the voter had already voted. The actual percentage is likely much higher because fewer than one-third of counties report provisional ballot rejections for this reason.

[24]In response to the concern over the chain of custody of mail ballots, some jurisdictions have begun to employ programs to track mail ballots as they move through the mail system. One such program was developed by the Denver, Colorado Elections Division, called Ballot TRACE.

[25]The average county with no unreturned absentee ballots in 2008 mailed out 125 absentee ballots; the average county overall mailed out 7,331. The average county with no unreturned absentee ballots in 2010 mailed out 268 absentee ballots; the average county overall mailed out 5,512. The average county with no unreturned absentee ballots in 2012 mailed out 223 absentee ballots; the average county overall mailed out 7,313. The average county with no unreturned absentee ballots in 2014 mailed out 224 absentee ballots; the average county overall mailed out 6,610. The average county with no unreturned absentee ballots in 2016 mailed out 454 absentee ballots; the average county overall mailed out 9,123.

[26]U.S. Election Assistance Commission, Uniformed and Overseas Citizens Absentee Voting Act (2008 report), 10, https://www.eac.gov/sites/default/files/eac_assets/1/6/2008_Uniformed_and_Overseas_Citizens_Absentee_Voting_Act_Survey.pdf. U.S. Election Assistance Commission, Uniformed and Overseas Citizens Absentee Voting Act (2010 report), 8, https://www.eac.gov/sites/default/files/eac_assets/1/28/EAC%202010%20UOCAVA%20Report_FINAL.pdf. U.S. Election Assistance Commission, Uniformed and Overseas Citizens Absentee Voting Act (2012 report), 9, https://www.eac.gov/sites/default/files/eac_assets/1/28/508compliant_Main_91_p.pdf.

[27]Federal Voting Assistance Program, *2020 Report to Congress*, 67–70, https://www.fvap.gov/uploads/FVAP/Reports/FVAP-2020-Report-to-Congress_20210916_FINAL.pdf. Federal Voting Assistance Program, "2022 Post Election Report to Congress," https://www.fvap.gov/info/reports-surveys/2022postelectionreporttocongress. Federal Voting Assistance Program, "2024 Post Election Report to Congress," https://www.fvap.gov/info/reports-surveys/postelectionreporttocongress.

[28]Federal Voting Assistance Program, *2020 Report to Congress*, 67–70, https://www.fvap.gov/uploads/FVAP/

Reports/FVAP-2020-Report-to-Congress_20210916_FINAL.pdf. Federal Voting Assistance Program, "2022 Post Election Report to Congress," https://www.fvap.gov/info/reports-surveys/2022postelectionreporttocongress. Federal Voting Assistance Program, "2024 Post Election Report to Congress," https://www.fvap.gov/info/reports-surveys/postelectionreporttocongress.

[29]The correlation coefficient was calculated on the logged values, weighting each county by its number of registered voters.

[30]Federal Voting Assistance Program, *2020 Report to Congress*, 64–70, https://www.fvap.gov/uploads/FVAP/Reports/FVAP-2020-Report-to-Congress_20210916_FINAL.pdf. Federal Voting Assistance Program, *Data Standardization and the 2022 General Election*, 1–10, 22–23, https://www.fvap.gov/uploads/FVAP/Reports/2022-esb-research-note-final.pdf. Federal Voting Assistance Program, "2024 Post Election Report to Congress," https://www.fvap.gov/info/reports-surveys/postelectionreporttocongress.

[31]Federal Voting Assistance Program, *2020 Report to Congress*, 64–70, https://www.fvap.gov/uploads/FVAP/Reports/FVAP-2020-Report-to-Congress_20210916_FINAL.pdf. Federal Voting Assistance Program, *Data Standardization and the 2022 General Election*, 1–10, 22–23, https://www.fvap.gov/uploads/FVAP/Reports/2022-esb-research-note-final.pdf. Federal Voting Assistance Program, "2024 Post Election Report to Congress," https://www.fvap.gov/info/reports-surveys/postelectionreporttocongress.

[32]See Mark Lindeman and Philip B. Stark, "A Gentle Introduction to Risk-Limiting Audits," IEEE Security and Privacy (March 2012), http://www.stat.berkeley.edu/~stark/Preprints/gentle12.pdf

[33]National Conference of State Legislatures. 2025. "Post-Election Audits." https://www.ncsl.org/elections-and-campaigns/post-election-audits.

[34]Verified Voting. n.d. "Audits." https://verifiedvoting.org/audits/.

[35]U.S. Election Assistance Commission. *2024 Election Administration and Voting Survey Comprehensive Report* (2025), p. 38, https://www.eac.gov/sites/default/files/2025-07/2024_EAVS_Report_508.pdf

[36]U.S. Election Assistance Commission. *2024 Election Administration and Voting Survey Comprehensive Report* (2025), p. 38, https://www.eac.gov/sites/default/files/2025-07/2024_EAVS_Report_508.pdf

[37]Steven J. Rosenstone and Raymond E. Wolfinger, "The Effect of Registration Laws on Voter Turnout," American Political Science Review 72 (1) (1978): 22–45; and G. Bingham Powell Jr., "American Voter Turnout in Comparative Perspective," American Political Science Review 80 (1) (1986): 17–43.

[38]Based on weighting by variable PWSSWGT, which is the "final weight" given to each individual in the survey and is constructed to be proportional to the inverse probability of being included in the survey. Percentages are based on respondents who gave one of these answers, excluding those who refused or said they did not know, did not respond, or were not in the sample universe.

[39]U.S. Election Assistance Commission, *Election Administration and Voting Survey (EAVS) 2024 Comprehensive Report*, 147–49, 245, 249, 275–76, https://www.eac.gov/sites/default/files/2025-06/2024_EAVS_Report_508c.pdf.

[40]For a review of the use of the residual vote rate, see Charles Stewart III, "Voting Technologies," Annual Review of Political Science 14 (2011): 353–378. A book that makes extensive use of this measure is Martha Kropf and David C. Kimball, *Helping America Vote: The Limits of Election Reform* (New York: Routledge, 2011).

[41]Charles Stewart III, "The Performance of Election Machines," in *The Measure of American Elections*, eds. Barry C. Burden and Charles Stewart III (New York, Cambridge University Press: 2014).

[42]District of Columbia and Nevada.

[43]Charles Stewart III, Michael Alvarez, Stephen S. Pettigrew, and Cameron Wimpy, "Residual Votes and Abstentions in the 2016 Election," paper presented at the annual meeting of the Southern Political Science Association, New Orleans, LA, January 4–6, 2018.

[44]See Mark Lindeman and Philip B. Stark, "A Gentle Introduction to Risk-Limiting Audits," IEEE Security and Privacy (March 2012), http://www.stat.berkeley.edu//~stark/Preprints/gentle12.pdf

[45]election.lab.ufl.edu

[46]Raymond E. Wolfinger and Steven J. Rosenstone, *Who Votes?* (Yale University Press: 1980).

[47]Glenn E. Mitchell and Christopher Wlezien, "The Impact of Legal Constraints on Voter Registration, Turnout, and the Composition of the American Electorate," *Political Behavior* 17 (2) (1995): 179–202.

[48]Robert S. Erikson, "Why Do People Vote? Because They Are Registered," *American Politics Research* 9 (3) (1981): 259–276.

[49]According to the EAC's 2009-10 NVRA report, 25.2% of removals from voter registration lists during the 2009-10 election cycle were due to voters "moving from jurisdiction" (Table 4b). This is in contrast with 40.7% of removals being because of "failure to vote."

[50]For more information about the difference between the VRS numbers and state-reported numbers of registered voters, see The Pew Charitable Trusts, *Election Administration by the Numbers: An Analysis of Available Datasets and How to Use Them*, https://www.pewtrusts.org/~/media/legacy/uploadedfiles/pcs_assets/2012/pewelectionsbythenumberspdf.pdf

[51]In 2012, 7.3% of nonregistrants stated they were unregistered for this reason. Although respondents are screened for citizenship status before being asked the questions in the VRS, it is likely that some noncitizens made it past this screen and then reported not registering because they were ineligible. The other main reason for giving this answer is likely that the respondent was unable to register because of a felony conviction.

[52]North Dakota has no voter registration, and provisional ballots are not issued in the state, so it is not evaluated for either the voter registration lookup tool or the provisional ballot lookup tool. Provisional ballots also are not issued in Idaho, Minnesota, and New Hampshire so they are not evaluated for the provisional ballot lookup tool. While Vermont can technically issue provisional ballots, they seldom do and so are excluded from provisional ballot indicators as well.

[53]North Carolina State Board of Elections, "November 2014: State Board of Elections Analysis of Voter Wait Times."

[54]Lorraine G. Allan, "The Perception of Time," *Perception & Psychophysics* 26 (5) (1979): 340–354.