PERFORMANCE AUDIT

Office of the Washington State Auditor
Pat McCarthy

Evaluating Washington's Ballot Rejection Rates

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Executive Summary

Background (page 7)

Washington's counties carry out the state's elections, with support and guidance from the Secretary of State. Washington is one of only a few states that votes entirely by mail. Election officials cited several advantages of voting by mail: it is a convenient and flexible way for voters to cast their vote, it reduces or eliminates long wait times in polling places and, in some cases, it increases voter turnout. In Washington's vote-by-mail system, county election officials mail every active voter a ballot about three weeks before the election. Voters have until Election Day to complete a ballot, sign the return envelope and return it. Since there is an extended time period to vote, voters do not have to plan around Election Day.

Benefits of voting by mail include convenience, but ballots can nonetheless be rejected for three main reasons: received or postmarked after Election Day, missing the voter's signature on the ballot envelope, or officials cannot confirm the voter's signature. Research on mail-in ballots from voters in Florida, Georgia, Colorado and California shows that voters from certain counties and demographic groups may have their ballots rejected more often than others.

The likelihood a ballot was rejected was highly correlated with the county where it was cast (page 13)

We conducted a detailed statistical analysis of ballots submitted for the 2020 general election in Washington. Based on the analysis, the county where a ballot was cast was the most significant variable related to rejection. After accounting for demographic factors like age, race, education levels and income, we estimated that ballots submitted to some counties were four to seven times more likely to be rejected than ballots submitted to other counties. Additionally, after reviewing a random sample of more than 7,200 signatures on ballot envelopes, we found that ballots appear to have been accepted or rejected appropriately, but counties with lower rejection rates appeared more willing to accept less conclusive signatures. Although trainings and statewide criteria may help standardize the processes, signature verification is ultimately subject to human judgment.

Ballots cast by members of certain demographic groups – younger voters, male voters, and voters belonging to certain racial and ethnic groups – were more likely to be rejected, but the audit found no evidence of bias (page 17)

Although the voter's county was the most significant variable related to rejection, other demographic attributes were also highly correlated with ballot rejection. Ballots from younger voters, male voters, and voters belonging to certain racial and ethnic groups were more likely to be rejected. Researchers suggest possible explanations for higher ballot rejection rates, such as lack of familiarity with the voting process among younger voters, or language barriers for some racial and ethnic groups. After reviewing county practices and procedures, the audit found few discernable patterns that helped explain differences in rejection rates. We also found no evidence of bias when counties accepted or rejected ballots.

Audited counties met legal requirements, with one exception, and used many leading practices (page 24)

The state sets many requirements for elections, such as requiring counties to make attempts to contact voters and cure ballots. The 10 counties we selected for the audit met state requirements related to ballot review and curing processes. Most audited counties also met requirements related to voting locations, although three of the 10 did not have the required number of drop boxes. In addition to meeting most legal requirements, audited counties implemented many leading practices to help reduce ballot rejections, such as conducting voter outreach using a variety of media. Adopting additional leading practices currently used by some Washington counties may help lower rejection rates and increase cure rates.

Counties could consider other innovative practices to reduce ballot rejection rates and disparities (page 33)

Other innovative practices could further reduce ballot rejection rates and disparities in rates among counties and demographic groups. The audit identified some additional, sometimes innovative, practices that could offer counties ways to reduce ballot rejection rates. For example, practices include reducing rejection rates by providing voters with digital opportunities to cure ballots. Although Washington's elections may benefit from innovative practices, officials must first consider current regulations, available resources and voter needs.

State Auditor's Conclusions (page 37)

In every election, some mail-in ballots will be rejected, whether because the ballot is late, it is unsigned, or the voter's signature does not match what is on file. In the context of the total number of mail-in ballots cast, the number that are rejected is still quite low — less than 1 percent in Washington for the 2020 general election. However, the rate at which ballots are rejected varies for different counties and for different groups of voters.

Disparities in rejection rates for different racial and ethnic groups are unacceptable, and we explicitly looked for bias in the decisions to accept or reject individual ballots, to see if that could help explain the differences. We found no evidence of bias in those decisions. While that is good news, it also means we are not able to explain what causes rejection rates to vary for these groups of voters.

A takeaway from this audit is that we overwhelmingly concurred with counties' decisions about which ballots to accept and which to reject. In addition, for the 10 counties we looked at, all met state requirements related to signature verification. In fact, some counties went beyond those requirements and adopted leading practices we identified.

Given the importance of public confidence in elections, and the seriousness of the disparities identified, I encourage counties to seriously consider some of the more innovative and promising practices detailed in this report.

Recommendations (page 38)

We made a series of recommendations to all Washington counties to reduce the number of rejected ballots. When implementing these recommendations, counties should weigh current laws, resources available, and potential effects on voters.

Recommendations include: giving voters more information; improving efforts to reach voters whose ballots are challenged; tracking information about efforts taken to help determine effectiveness; and increasing the number of voter signatures collected and kept on file. We also recommend all counties develop written policies and procedures.

Next steps

Our performance audits of state programs and services are reviewed by the Joint Legislative Audit and Review Committee (JLARC) and/or by other legislative committees whose members wish to consider findings and recommendations on specific topics. Representatives of the Office of the State Auditor will review this audit with JLARC's Initiative 900 Subcommittee in Olympia. The public will have the opportunity to comment at this hearing. Please check the JLARC website for the exact date, time and location (www.leg.wa.gov/JLARC). The Office conducts periodic follow-up evaluations to assess the status of recommendations and may conduct follow-up audits at its discretion. See **Appendix A**, which addresses the I-900 areas covered in the audit. **Appendices B** and **C** contain information about our methodology. In addition, a **Bibliography** at the end of the report lists our primary resources.

Background

Washington's counties carry out the state's elections, with support and guidance from the Secretary of State

Most of the work that goes into an election in Washington is carried out by county election departments, which in most counties are part of the county auditor's office. Under state law, Washington counties are responsible for developing and sending ballots to active voters, then verifying signatures and counting votes after they receive ballots. Counties must have a minimum number of voting locations, including voting centers, ballot drop boxes, and "student engagement hubs" at state and regional colleges and universities if located within a county's jurisdiction. The state holds up to five elections annually.

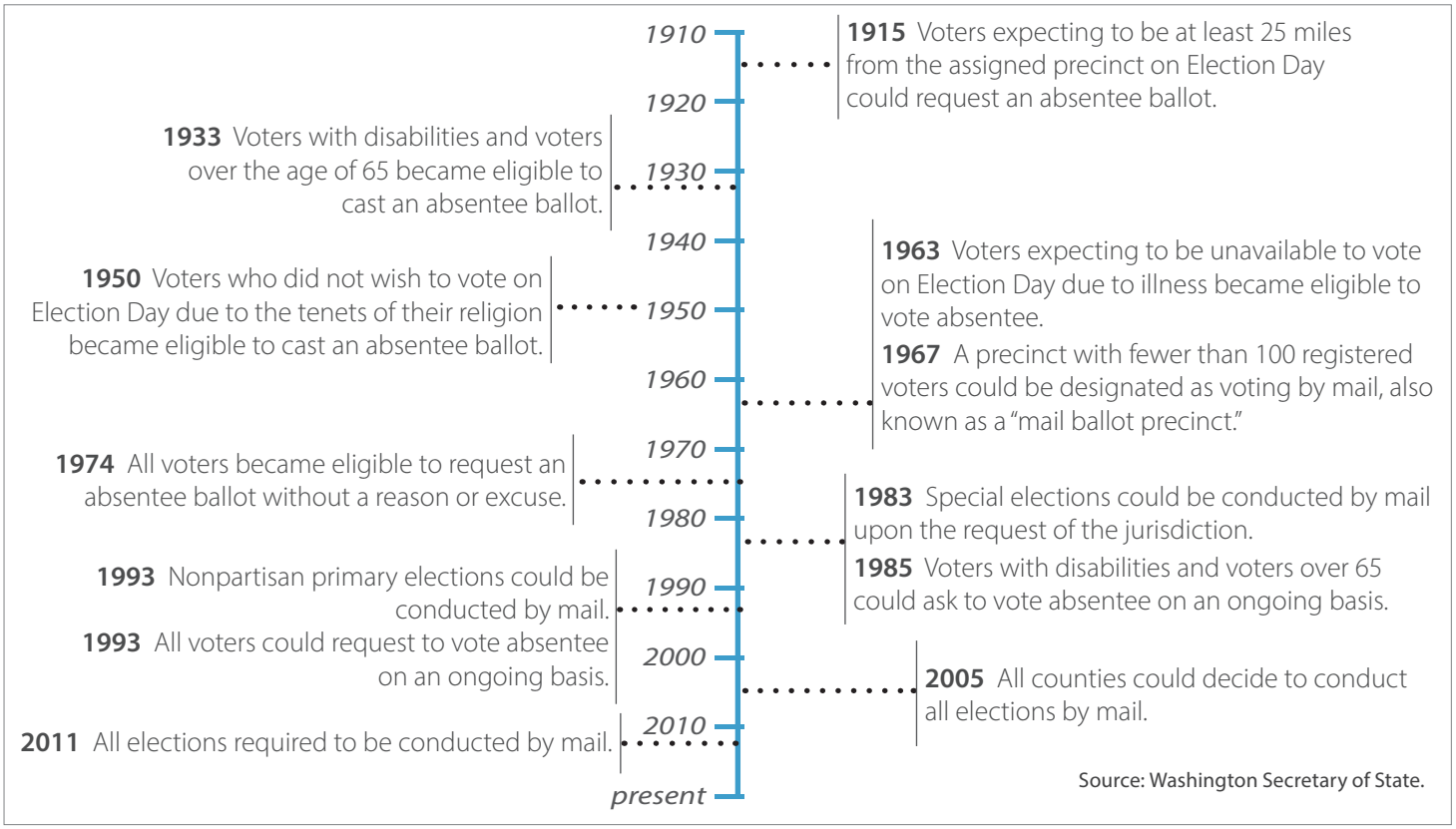
At the state level, the Secretary of State provides support to counties and is responsible for establishing uniform rules and standards and certifying statewide elections. The Secretary of State's office publishes calendars and guides to help create uniform standards and processes, and it tracks elections and publishes results on its website. It also maintains VoteWA, the statewide elections administration system that all counties use.

Washington is one of only a few states that votes entirely by mail

Washington has long used voting by mail, or absentee voting (see **Exhibit 1** on page 8). In 1915, Washington began allowing absentee ballots for voters at least 25 miles away from their precinct on Election Day. Over the next decades, vote-by-mail allowances expanded to include disability, religion, illness and counties with fewer than 100 registered voters. Then, in 1974, Washington became the first state to allow no-excuse absentee voting, which allowed anyone to request a mail-in ballot without providing a reason. In 2011, Washington became the second state, after Oregon, to require that all elections be conducted by mail.

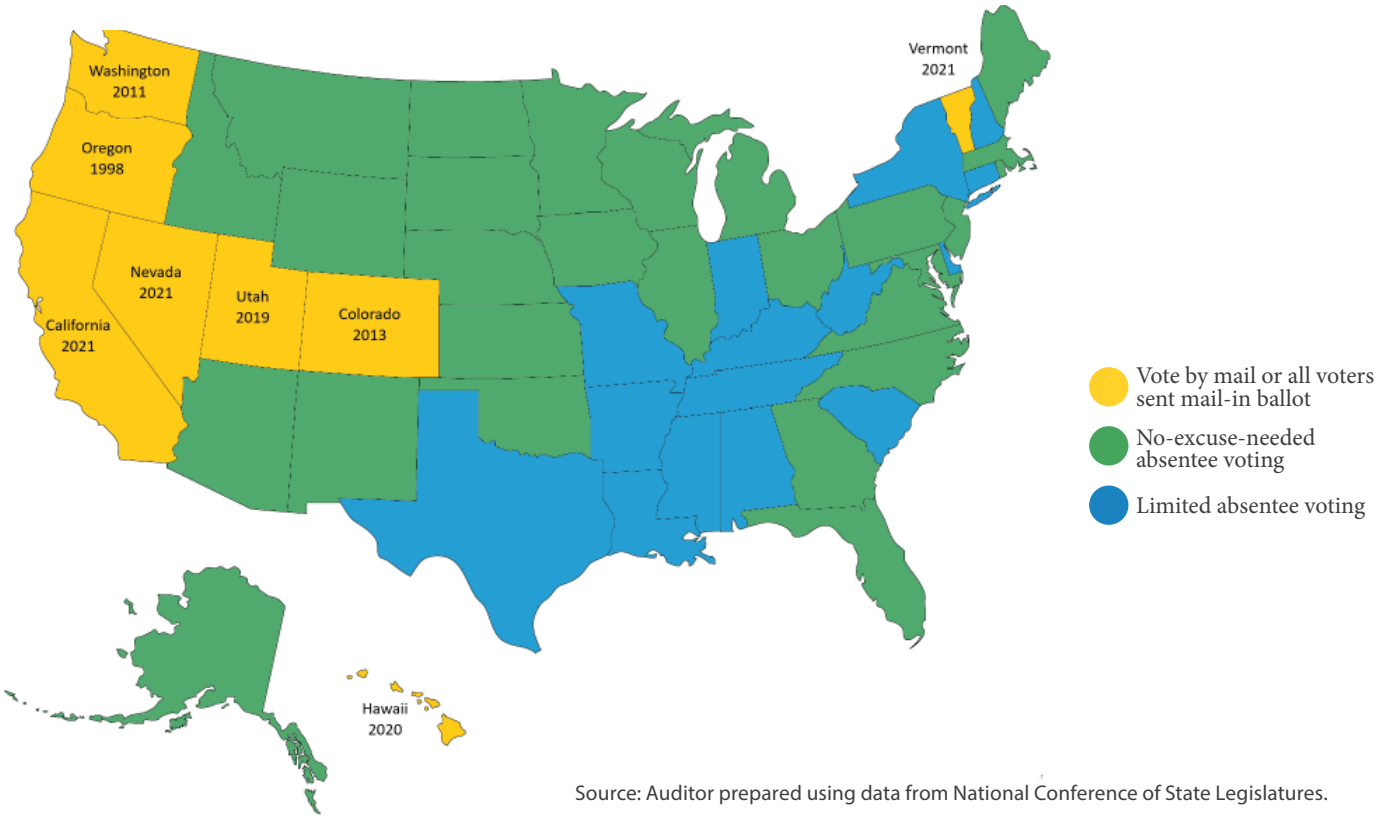
As of 2021, Washington is one of eight states allowing all voters to vote by mail, although other states use mail-in voting to varying degrees. As the map in **Exhibit 2** (on page 8) shows, Oregon, Colorado and Washington have long been vote-by-mail states. Since 2019, five more states – Utah, Hawaii, California, Nevada and Vermont – started sending all voters a mail-in ballot. About 30 other states allow voters to

Exhibit 1 – Brief history of vote-by-mail in Washington



Source: Washington Secretary of State.

Exhibit 2 – As of 2021, eight states require vote by mail or send all active voters a mail-in ballot



Source: Auditor prepared using data from National Conference of State Legislatures.

request a mail-in ballot without requiring a reason for the request. The remaining states only allow people to vote by mail if they meet certain criteria, usually for medical reasons or because they will be out of the area.

Because of the coronavirus pandemic, voting by mail increased significantly during the 2020 elections

The interest in voting by mail increased substantially during the coronavirus pandemic as people sought ways to avoid congregating at polling places. Multiple states made voting by mail easier and more accessible to voters. For example, some states automatically sent all voters a mail-in ballot, while others automatically sent all voters a form to request a mail-in ballot. According to the Pew Research Center, mail-in voting accounted for about 25 percent of the 2016 and 2018 general election ballots, but about half of 2020 general election ballots.

Benefits of voting by mail include convenience, but ballots can nonetheless be rejected for several reasons

A primary benefit of voting by mail is the ease of casting a ballot. Election officials we spoke with cited several advantages of voting by mail: it is a convenient and flexible way for voters to cast their vote, it reduces or eliminates long wait times in polling places and, in some cases, it increases voter turnout. In Washington's vote-by-mail system, county election officials mail every active voter a ballot about three weeks before the election. Voters have until Election Day to complete a ballot, sign the return envelope and return it, usually by mail or in a ballot drop box. Since there is an extended time period to vote, voters do not have to plan around Election Day.

Election officials must ensure that only valid votes are counted and reject ballots for three main reasons:

- Received or postmarked after Election Day
- Missing the voter's signature on the ballot envelope
- Voter signature cannot be confirmed

Of these, only the latter two can be "cured" by election officials, a process discussed below.

Late ballots. In Washington, voting locations and ballot drop boxes are closed by 8 p.m. on Election Day. Election officials must reject ballots not received or postmarked by Election Day. In these cases, election officials receive and track the ballot but it is not considered a valid vote.

Missing or mismatched signatures. Ballots rejected because officials cannot confirm the voter's signature follow a more complex path. People must provide a signature when registering to vote. Election staff use that signature, or an updated signature, to confirm the person's identity when processing ballots. In Washington, county employees, typically trained by the Washington State Patrol, review ballots by comparing the signatures on ballot return envelopes to those in voter registration files.

If the ballot envelope is unsigned or employees question whether a signature matches the voter's signatures on file, additional county officials review the envelope to confirm the issue. The ballot is considered "challenged" in these situations. For example, if multiple voters live in one household, someone may accidently sign and return the ballot of a roommate or a family member. Since the signature on the ballot does not match the signature on file for that ballot, election officials challenge the ballot.

Election officials must attempt to contact voters with challenged ballots to verify or update information so valid votes can be accepted – a process known as "curing." Voters have until election certification (three weeks following Election Day for general elections) to cure ballots. The county canvassing board, or its delegate, then performs a final review on all challenged ballots, including information received during curing, and makes the final decision to accept or reject each one.

Data and research from other states show rejection rates vary by county and for certain demographic groups

Research on mail-in ballots from multiple states, including California, Georgia, Florida and Colorado, shows that some demographic groups are more likely to have mail-in ballots rejected than others.

For example, several research studies of California voters (listed in sidebar) found that those who requested ballots in languages other than English had a much higher likelihood of ballot rejection. A 2020 study by researchers from the University of Florida and Dartmouth College found that ballots were more likely to be rejected when cast by younger voters, certain racial and ethnic groups, and residents of some Florida counties. Researchers from the University of Florida, University of North Florida and Connecticut College examining Georgia's 2018 election found that newly registered voters, younger voters, women, and some racial and ethnic groups had higher ballot rejection rates. Finally, a 2020 report from Colorado Public Radio found Colorado's vote-by-mail system had similar disparities among different voter groups.

Research studies examining California voters consulted for this audit

California Institute of Technology (CalTech) and Massachusetts Institute of Technology (MIT) – 2004

Asian Americans Advancing Justice – 2017

California Voter Foundation – 2020

This audit reviewed ballot rejection rates

The Washington State Legislature mandated a performance audit of ballot rejection rates in a proviso to the 2020 Supplemental Budget. Legislators expressed concerns with the state's ballot rejection rate, and the possibility that rates varied between counties and different groups of Washington voters.

The audit was required to review processes for identifying, curing and rejecting ballots; compare county processes to laws, leading practices and to each other; examine the accuracy of ballot rejections; make recommendations to improve processes for rejecting ballots; and analyze the demographics of voters whose ballots were rejected.

We conducted this audit to answer the following questions:

- Are certain demographic groups more likely to have their ballots rejected?
- Are ballots appropriately rejected?
- Do county practices and procedures for rejecting ballots follow the law and leading practices?
- What other practices or strategies could counties use to reduce ballot rejection rates and the disparities in rates among counties and demographic groups?

To answer the first audit question, we reviewed voter data from the 2020 general election. We excluded ballots rejected for late return because data on these ballots were sometimes inconsistent between counties. For the second question, we reviewed a random sample of ballot return envelopes and signatures on file from 16 counties that store this information in the state's central voter management database, VoteWA. The ballot return envelopes and signatures on file belonged to voters who had cast ballots during the 2020 general election.

For the remaining questions, we researched relevant laws, rules and leading practices, and we interviewed officials and employees from 10 counties. **Appendix D** contains a list of leading practices related to reducing rejection rates and whether sampled counties implemented them. The legislative mandate ordered that we focus on five counties with higher rejection rates and five counties with lower rejection rates. We visited nine of the counties during the 2021 special and primary elections to observe employees process ballots. One of the 10 sampled counties did not hold an election during our audit period.

The results of our work are organized in four sections in this report:

1. The county where a ballot was cast was the most significant variable related to rejection
2. Ballot rejection was also highly correlated with demographic attributes, such as race and age of voter
3. The 10 counties selected for the audit met state requirements related to ballot review and curing processes, although not all of these counties met new requirements for ballot drop boxes
4. The 10 audited counties also implemented many leading practices, although there are additional leading and innovative practices they could consider implementing

Audit Results

The likelihood a ballot was rejected was highly correlated with the county where it was cast

Result in brief

For the 2020 general election, the county where a ballot was cast was the most significant variable related to rejection. Overall, ballots appear to have been accepted or rejected appropriately, but counties with lower rejection rates appeared more willing to accept less conclusive signatures.

For the 2020 general election, the county where a ballot was cast was the most significant variable related to rejection

For the 2020 general election, the overall ballot rejection rate in Washington was 0.72 percent, or fewer than 30,000 ballots out of about 4.2 million cast, excluding late ballots. County ballot rejection rates ranged from less than one-tenth of a percent to about 1.5 percent of ballots cast, listed in **Exhibit 3**. We wanted to determine why county rejection rates varied and what variables affect ballot rejection.

Exhibit 3 – Rejection rates by county from highest to lowest in the 2020 general election

County	Rate	County	Rate	County	Rate	County	Rate
Franklin	1.50%	Benton	0.72%	Grant	0.50%	Jefferson	0.29%
Okanogan	1.28%	Whitman	0.70%	Klickitat	0.49%	Chelan	0.28%
Adams	1.15%	Lincoln	0.65%	Cowlitz	0.48%	Garfield	0.27%
Kittitas	1.14%	Clallam	0.64%	Whatcom	0.47%	Stevens	0.26%
Snohomish	0.99%	Skagit	0.63%	Spokane	0.46%	Ferry	0.25%
Wahkiakum	0.98%	Pierce	0.63%	Grays Harbor	0.46%	San Juan	0.25%
King	0.86%	Pacific	0.59%	Mason	0.44%	Douglas	0.25%
Kitsap	0.85%	Lewis	0.57%	Skamania	0.38%	Pend Oreille	0.20%
Clark	0.76%	Island	0.56%	Walla Walla	0.36%	Columbia	0.04%
Asotin	0.72%	Thurston	0.51%	Yakima	0.29%		

Note: Data excludes late ballots.

Source: Auditor prepared using data from Washington Secretary of State.

We built a statistical model to assess variables most likely to affect ballot rejections

To determine what variables were related to ballot rejection, we first conducted a literature review to identify variables prior researchers found correlated with rejection. This included demographic variables – such as age, race and gender – as well as the jurisdiction in which the voter cast the ballot. After we obtained data from the Secretary of State's office and the U.S. Census Bureau, we used a logistic regression model to estimate the likelihood of rejection based on the different variables. This analysis allowed us to control for other variables in the model so we could see whether there was a relationship between each variable and ballot rejection independently. We excluded late ballots from this analysis because data on these ballots were sometimes inconsistent between counties. Appendix C contains a complete description of the regression analysis and a list of the variables included.

Because federal law prevents Washington from collecting voter race or ethnicity information, we predicted each voter's race and ethnicity with a method used by research institutions and other government agencies when data on race and ethnicity is unavailable. This method is described briefly in the sidebar.

How we estimated race and ethnicity

The audit relies on the Bayesian Improved Surname Geocoding (BISG) proxy method to combine geography- and surname-based information into a single proxy probability for voter race and ethnicity. This method is used by the Consumer Financial Protection Bureau, the RAND Corporation, and others when individual race and ethnicity of a person is unavailable. Research shows that the BISG method produces results highly correlated with self-reported information and is more accurate than relying on someone's name or location only.

For more information about this method, see Appendix B and the bibliography.

We analyzed a variety of demographic and location-based variables, and found the county where a ballot was cast was the most significant variable related to rejection

Of all the variables we analyzed, the greatest disparities in the likelihood of ballot rejection occurred between the counties where ballots were cast. After accounting for demographic variables like age, race, education levels and income in our regression analysis, we estimated that ballots submitted to some counties were four to seven times more likely to be rejected for signature mismatches or being unsigned than ballots submitted to other counties. The disparity was even greater when analyzing the likelihood a ballot would be rejected for just signature mismatches, with ballots from two counties having 18 times the likelihood of rejection as another county.

Overall, ballots appear to have been accepted or rejected appropriately, but counties with lower rejection rates appeared more willing to accept less conclusive signatures

We reviewed a random sample of more than 7,200 ballots to determine whether they were accepted or rejected appropriately

To determine whether ballots were appropriately accepted or rejected, we used automatic signature verification software that compared a statistically significant random sample of more than 7,200 voter ballot signatures to those on file from the 2020 general election. If the software deemed a signature as genuine and the county had also accepted it, we determined it was appropriately accepted.

Auditors trained by the State Patrol in signature review then reviewed all cases where the software disagreed with the county's decision or where it deemed the signature as a possible forgery. We considered these ballots appropriately accepted or rejected if the majority of auditors reviewing the signatures agreed with the county's decision. If the majority of auditors disagreed with the county's decision, two experienced reviewers from the Secretary of State's office then reviewed the signatures for a final determination.

We agreed with county determinations for more than 98 percent of the signatures reviewed, but found counties with lower rejection rates were more likely to accept less conclusive signatures

When applying results from our sample to the entire population of signatures, we estimated that 98.7 percent of county decisions were appropriate. However, we observed that counties with lower rejection rates were more likely to accept less conclusive signature matches, which could contribute to differences in rejection rates.

Signature verification is ultimately subject to human judgment

Unlike the other main reasons ballots are rejected – late postmarks and missing signatures – deciding whether a signature matches is inherently subjective and requires some level of human judgment (see examples in **Exhibit 4**). Although trainings and statewide criteria may help standardize processes, we found that even experienced reviewers can come to different conclusions. We observed county officials debate and reverse decisions about signature matches. Similarly, employees from the Secretary of State's office sometimes disagreed with each other about signature matches. Members of our own team participating in the review also disagreed on whether many of the signatures matched.

Exhibit 4 – Deciding whether signatures match is inherently subjective and requires some level of human judgment

Source: Colorado Signature Verification Guide.

We also found that county officials interpreted statewide criteria for signature verification differently. For example, some signature reviewers said they look for at least three similarities while others could not articulate or specify how many similarities they look for.

Ballots cast by members of certain demographic groups – younger voters, male voters, and voters belonging to certain racial and ethnic groups – were more likely to be rejected

Result in brief

Although the voter's county was the most significant variable related to rejection, other demographic attributes were highly correlated with ballot rejection. Ballots from younger voters, male voters, and voters belonging to certain racial and ethnic groups were more likely to be rejected. Researchers suggest possible explanations for higher ballot rejection rates, such as frequent signature changes among young voters or language barriers for particular racial and ethnic groups. The audit found few discernable patterns that helped explain differences in rejection rates. We found no evidence of bias when counties accepted or rejected ballots.

Although the voter's county was the most significant variable related to rejection, other demographic attributes were highly correlated with ballot rejection

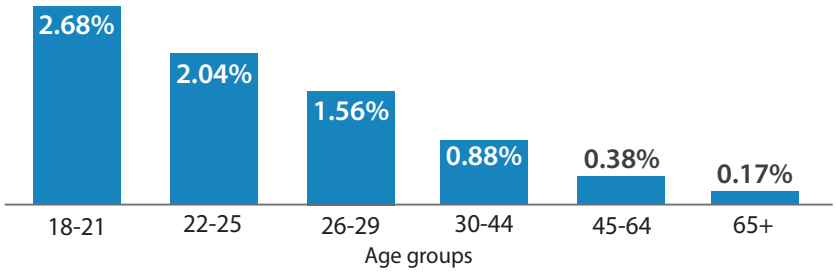
In addition to where a ballot was cast, the audit also identified other demographic variables affecting the likelihood a voter's ballot would be rejected. The variables included: age, voting experience, gender, and race and ethnicity. We used our statistical model to assess the variables that were most likely to affect ballot rejection (see Appendix C). This gave us the ability to produce estimates of the overall effect each variable had on ballot rejection.

Ballots from younger voters and those with less voting experience were more likely to be rejected

We found the age of voters was significantly related to ballot rejection rates. Despite making up only 10 percent of the voting population, voters under the age of 26 accounted for more than 30 percent of rejected ballots. As **Exhibit 5** shows, the youngest group of

Exhibit 5 – Ballots of younger voters were rejected at a higher rate than those of older voters

2020 general election; Rate of rejection by age group



Source: Auditor prepared using data from WA Secretary of State.

voters had a rejection rate of 2.68 percent, while the oldest voters had a rejection rate of just 0.17 percent. After accounting for other variables with our regression analysis, we estimated that Washington's youngest voters were almost three times more likely to have their ballots rejected than Washington's oldest voters. This was consistent when we considered only ballots rejected for mismatched signatures.

Voting experience was also a significant variable. Ballot rejection rates were higher for ballots cast by less experienced voters. The rejection rate of ballots cast by first-time voters was more than five times greater than for voters with previous voting experience. With every ballot a voter cast, the likelihood of their ballot being rejected decreased by 30 percent. We also estimated that voters who had their 2020 primary election ballot rejected were almost four times more likely to have their 2020 general election ballot rejected.

Ballots from male voters were more likely to be rejected than from female voters

We estimated that male voters were 42 percent more likely than female voters to have ballots rejected. Our result was inconsistent with two University of Florida studies of mail-in ballots that examined correlations between gender and ballot rejection. One study of rejected ballots in Georgia found women were much more likely to have their ballots rejected. The other study, of rejected ballots in Florida, found no significant difference between male and female voter ballot rejections.

Ballots from voters belonging to certain racial and ethnic groups were more likely to be rejected

White voters had the lowest ballot rejection rate among racial and ethnic groups. We used a race predictor model (see Appendix B and the bibliography for more information about this model) to categorize voters into six racial and ethnic categories as defined by the U.S. Census Bureau.

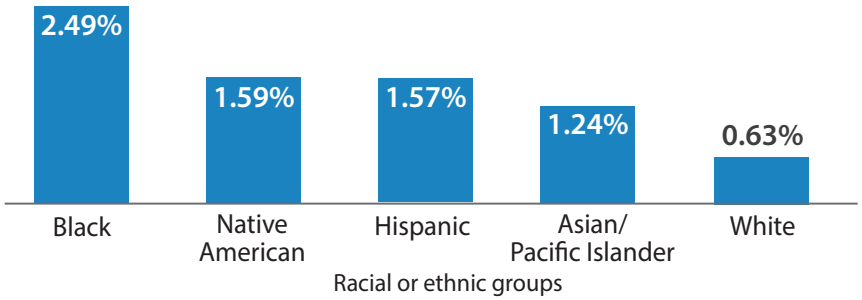
- Hispanic
- Non-Hispanic white
- Non-Hispanic Black
- Non-Hispanic Asian/Pacific Islander/ Native Hawaiian
- Non-Hispanic Native American/Alaska Native
- Non-Hispanic multiracial

We found a statistically significant difference in ballot rejection rates between white voters and voters from all other racial and ethnic groups, except Native Americans and multiracial voters. Limitations in our predictive method resulted in low population counts for Native Americans and multiracial voters, which likely contributed to the lack of statistical significance for those groups.

We also found the greatest disparity was between white and Black voters, with rejection rates at 0.63 percent and 2.49 percent, respectively (shown in **Exhibit 6**). Even when controlling for other variables, we estimated Black voters were twice as likely to have ballots rejected than white voters.

Exhibit 6 – Ballots of white voters were rejected at a lower rate than those of all other racial or ethnic groups

2020 general election; Rate of rejection by race or ethnic group



Note: Our race predictor model only categorized 30 voters as multiracial. None of those voters had their ballots rejected.

Source: Auditor prepared using data from WA Secretary of State.

We also estimated that non-English speakers were much more likely to have ballots rejected. Due to King County's size and diversity, the county was required to provide translated ballots in four languages during the 2020 general election. We completed a separate analysis to determine whether non-English speakers were more likely to have ballots rejected. We estimated that voters in the county casting non-English ballots had a 47 percent greater likelihood of ballot rejection than voters who cast English-language ballots.

Researchers suggest possible explanations for higher ballot rejection rates

Researchers who completed similar studies in other states proposed various theories for why some groups have higher rejection rates, including those we found to have higher rejection rates in Washington: younger voters, male voters, certain racial and ethnic groups, and where someone votes.

Signature inconsistencies and a lack of familiarity with the voting process may affect younger voters

Because a person's signature can change over his or her lifetime, researchers from the University of Florida and Dartmouth College propose that age may play a factor in rejection rates. Their work notes that younger voters' signatures may vary more from their file signatures because they have less experience providing official signatures. This increased risk of mismatched signatures may cause younger voters to have ballots rejected more often than older voters.

Researchers from the University of Florida, University of North Florida and Connecticut College also propose that younger voters may have less familiarity with the voting process, including the importance of a consistent signature and how to submit ballots properly and on time. These researchers note that younger voters may be overall less engaged with "old-fashioned" communication methods like mail. As curing processes usually use the mail, this likely results in missed opportunities to cure their ballots.

Name changes may make it more likely voters have an up-to-date signature on file

Researchers from the University of Florida and Dartmouth College proposed that voters who recently changed their names would have lower rejection rates, as officials are more likely to have an updated signature to review. They suggested that since women are more likely to change their last name upon marriage, it may result in a lower rejection rate for women. Although their study found the opposite of this theory, our results aligned with their original hypothesis.

A variety of cultural factors may affect ballot rejection rates of some racial and ethnic groups

Some racial and ethnic groups may face language or cultural barriers that increase the likelihood of ballot rejections. For example, researchers from MIT and CalTech suggest that some someone with limited abilities to read English may make more mistakes on the ballot and have more difficulty curing those mistakes. Similarly, the American Civil Liberties Union (ACLU) notes that for non-native English speakers, having to sign their name in a new language may also cause issues with consistent ballot signatures.

Differences between election jurisdictions may affect ballot rejection rates

Researchers propose that since elections are run at the local level, differences between jurisdictions may affect rejection rates. Washington sets uniform requirements for counties, but there are still some differences between county election processes. They include the levels of resources available, how counties implement requirements, and whether they incorporate other leading practices into procedures.

The audit found few discernable patterns that helped explain differences in rejection rates

Despite researcher suggestions for causes of higher rejection rates, we found few patterns to explain differences. For example, researchers propose that differences between jurisdictions could contribute to differences in rates, but we saw few differences in practices between the sampled counties with higher and lower rejection rates.

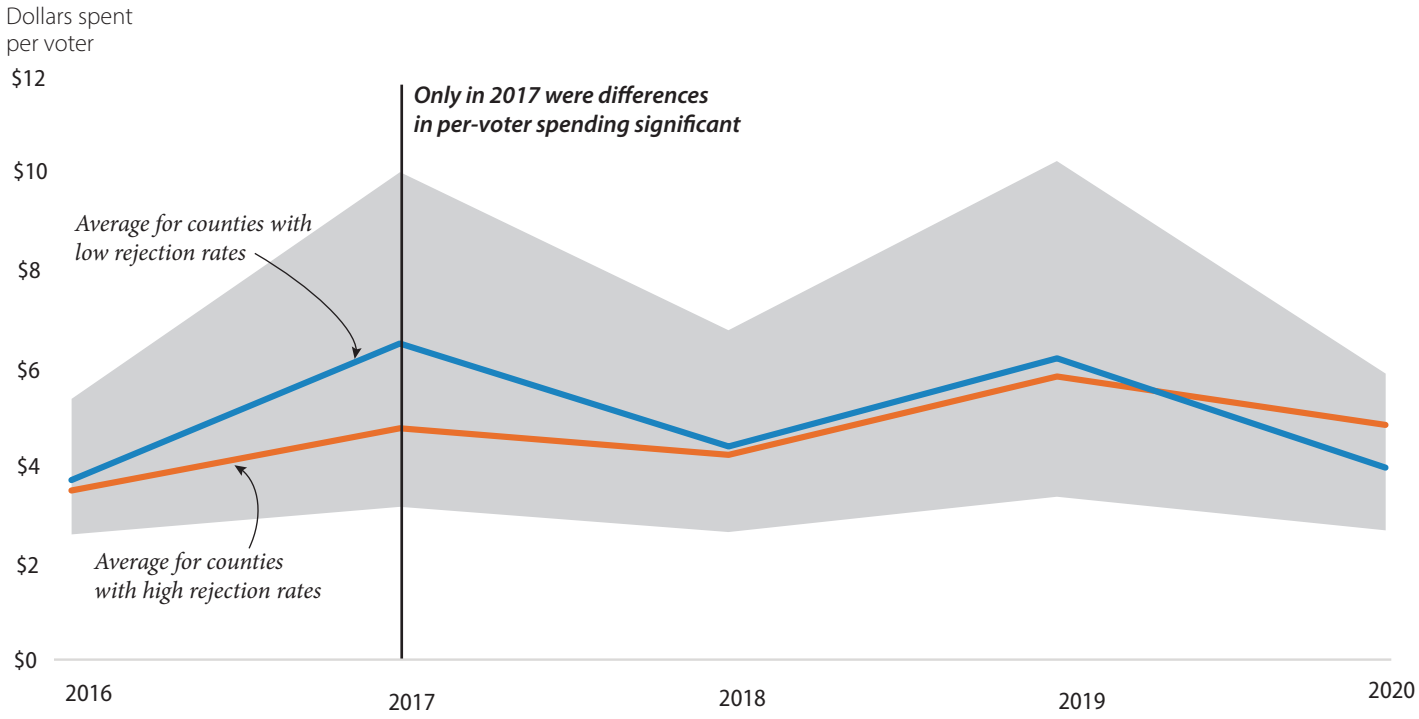
Instead, as discussed starting on page 27, there were a variety of leading practices that most counties used and other leading practices that few used, including counties with higher and lower rejection rates. For example, the audit found higher rejection rates for younger voters, but also found that audited counties with higher rejection rates and some counties with lower rejection rates conducted targeted outreach to these voters. Additionally, only two of the audited counties called or emailed voters within one day of challenging their ballots — one with lower and another with higher rejection rates. The lack of one identifiable cause suggests that multiple factors affect the rate and no one practice is responsible.

While there was not a clear delineation in the use of most leading practices between counties with lower and higher rejection rates, the audit did identify a few patterns among counties with lower rates that may have contributed to lower rates. As discussed on page 15, counties with lower rejection rates tended to accept less conclusive signatures more often. Also, of the ten audited counties, those with lower rejection rates tended to spend more on average per voter than those with higher rates.

As shown in **Exhibit 7**, the five counties with lower rejection rates spent more on election-related expenditures on average than the five counties with higher rejection rates in all but one of the last five years. However, differences in spending were not always significant, and some of the five counties with higher rejection rates regularly spent more than some counties with lower rejection rates.

Exhibit 7 – Of the 10 audited counties, counties with *lower* rejection rates tended to spend more per voter on average than counties with *higher* rates, though differences were significant only in 2017

Shaded area represents range of per-voter spending in the 10 counties



Source: Auditor prepared using county election expenditures from the State Auditor's Office Financial Intelligence Tool (FIT), and election and voter data from the WA Secretary of State's annual election reports.

We also found that having more up-to-date voter information likely helped lower rejection rates by increasing the number of cured ballots. Counties with lower rejection rates had higher cure rates (65 percent cured) than the other counties (50 percent cured).

While we found few patterns to explain differences in rejection rates, some county officials said they previously used practices that improved rejection rates. For example, Benton County officials said that after adding voters' names on the ballot return envelopes, they noted a decline in unsigned ballots. Klickitat County had a similar experience with targeted outreach reminding voters to vote early. We provide additional information about leading practices in counties in the next chapter.

We found no evidence of bias when counties accepted or rejected ballots

Researchers who worked on the study of Georgia, as well as at the University of Florida and Dartmouth College, also suggest that unconscious bias can affect decisions on whether or not to accept a signature as matching, but we found no evidence of bias in the counties' determinations. We specifically looked for evidence of this by reviewing a random sample of accepted ballots and those rejected for mismatched signatures. For the vast majority of accepted ballots and rejected ballots, the signatures either clearly matched or were obviously different. We identified a small portion of inconclusive signature matches.

For these inconclusive signatures, we analyzed data to determine if there were patterns or trends around race or ethnicity. However, we found no patterns that indicated a bias toward particular racial or ethnic groups that would lead to higher rejection rates among those groups. Based on this, we conclude that variations in rejection rates appear to be affected by some factors outside election officials' control, such as the cultural factors discussed previously.

Audited counties met legal requirements, with one exception, and used many leading practices

Result in brief

The state sets many requirements for elections. The 10 counties selected for audit met state requirements related to ballot review and curing processes. Most counties met requirements related to voting locations. In addition to meeting most legal requirements, audited counties have implemented many leading practices to help reduce ballot rejections. Adopting additional leading practices currently in use in some Washington counties can help lower rejection rates and increase cure rates.

The state sets many requirements for elections

While counties make many decisions about election processes, they must also follow state requirements that help ensure uniformity of elections across the state. For example, state law requires counties to use a statewide election administration system, VoteWA. This system houses all Washington voter and election information, allowing for more uniform and streamlined procedures across the state. VoteWA allows counties to save multiple examples of voter signatures on file from registration forms and cure letters, creating a lifetime database of signatures. In addition, it collects signatures from the Department of Licensing's database, so that the signature used for a driver's license or state identification card is available to any county. The system also generates cure letters, which a county may customize to send to voters whose ballots were challenged by election officials.

Other key statewide requirements counties must follow include:

- Attempt to cure challenged ballots by sending voters a cure letter. If they do not respond, call voters three days before the election is certified.
- Train employees on how to determine whether signatures match
- Begin opening voting locations at least 18 days before an election, including at least one voting center and at least one drop box at a different location
- Form an advisory committee to consult on election access issues for voters with disabilities. Small counties may join together for a single committee.
- Open a student engagement hub at state and regional colleges and universities if located within a county's jurisdiction

- Ensure voting locations include at least one ballot drop box for every 15,000 voters; one in every city, town and Census-designated place with a post office; one on tribal lands upon their request; one at a voting center that is accessible to people with disabilities; and one at any student engagement hub.

The 10 counties selected for audit met state requirements related to ballot review and curing processes

The legislative mandate for this audit required us to review the policies, procedures and practices at five counties with higher ballot rejection rates and five with lower rejection rates. We found that the 10 audited counties (listed in the sidebar) complied with all legal requirements related to ballot review and curing processes. For example, the audited counties used VoteWA for election administration and also conducted all required curing activities – sending a cure letter to voters with challenged ballots and calling them three days before the election is certified if they have not responded to the cure letter.

The 10 audited counties

Adams, Asotin, Benton, Cowlitz, King, Kittitas, Klickitat, Mason, San Juan, Whitman

Counties also met requirements related to training employees who review ballot signatures. Counties either received relevant training from the county itself or from the Washington State Patrol. Employees have annual training opportunities as part of the county auditors' annual elections conference, as well as other times throughout the year. All 10 counties reported training employees before reviewing any signatures, and sometimes also taking subsequent trainings to increase their expertise.

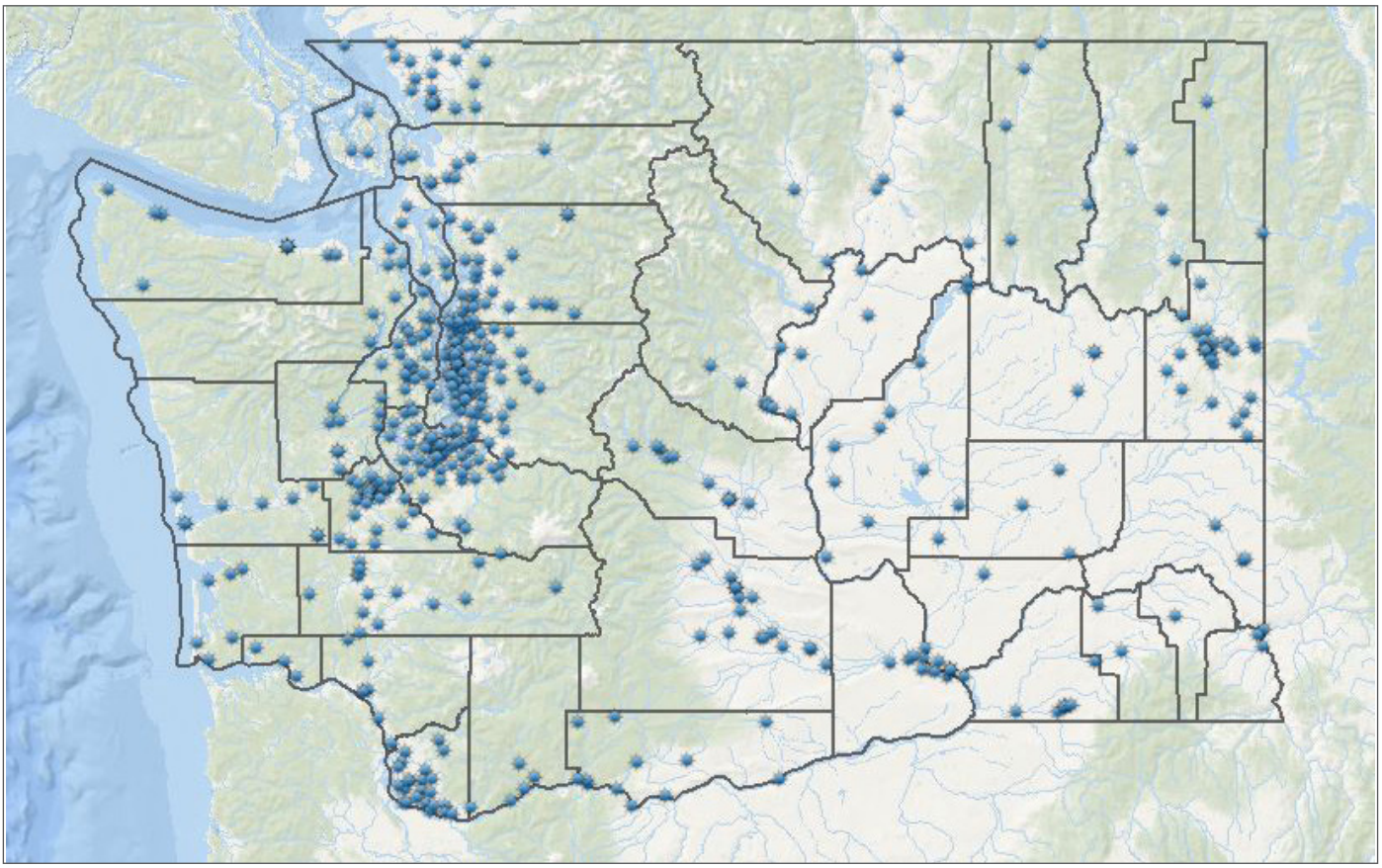
Most counties met requirements related to voting locations

Most audited counties met state laws put in place to ensure historically marginalized communities have access to voting. All met the requirement to open a voting center 18 days prior to an election, and to ensure at least one center was accessible to people with disabilities. All formed advisory committees, which addressed issues such as how to make voting more accessible, particularly for people with disabilities, and all counties required to establish student engagement hubs did so. However, three of the 10 audited counties did not have the legally required number of drop boxes.

Ballot drop boxes are a convenient way for voters to return ballots, helping ensure voters can submit their ballots by the deadline without risking delays in mail processing through a post office. Researchers have also suggested that voters'

physical distance from a polling location may affect rejection rates due to missed deadlines. In 2019, the current law related to drop box requirements went into effect. As shown in **Exhibit 8**, ballot drop boxes are located across the state.

Exhibit 8 – Ballot drop boxes are located throughout the state



Source: Auditor prepared using data from WA Secretary of State.

Officials offered multiple reasons for not having the legally required number of ballot drop boxes. Some counties said that they consider the new requirement an unfunded mandate and are participating in a related lawsuit against the state. Counties also said the specificity of the new law requires them to install drop boxes in areas where drop boxes might be unneeded, perhaps because they are too close to another drop box or in areas that already have very high turnout. For example, officials in Adams County said that the law required a drop box in a town with only about 200 voters, estimating that only a few dozen ballots were likely to be returned there.

Before the law was enacted, King County had begun to substantially increase its drop box count in 2015. Despite increasing the number of boxes from 10 to 73, the county still lacks the number of drop boxes the law requires. Officials said they are steadily working towards meeting the mandate. County election officials pointed out that while having more drop boxes is beneficial, the state should make allowance for mitigating factors, such as the population and specific needs of a city or town, and proximity of other voting locations.

In addition to meeting most legal requirements, audited counties implemented many leading practices to help reduce ballot rejections

Election officials at all of the audited counties have implemented many leading practices that can help reduce rejection rates. Experts from many fields – including the U.S. Election Assistance Commission, university research centers and the National Conference of State Legislatures – recommend leading practices around many issues. These practices include contacting voters who have problems with their ballots, ensuring counties send voters critical information, and conducting outreach and education to prevent problems from arising in the first place.

Have experienced employees review ballot signatures, including a second review of questionable signatures

To ensure ballots are accepted and rejected appropriately, state law requires counties to train employees to review ballot signatures. Most of the audited counties exceeded statutory requirements to ensure they appropriately challenged ballots. Practices used included:

- Use experienced employees to review ballot signatures and compare them to voters' signatures on file
- Review signatures more than once before officially challenging ballots and sending cure letters

Make multiple attempts to contact voters about challenged ballots

To cure ballots, state law requires counties to mail cure letters and call voters with challenged ballots three days before certification. Most of the audited counties exceeded state law by taking additional steps to contact voters with challenged ballots and reducing barriers for voters to return cure letters. County officials said they "do all that they can" within their available resources to cure challenged ballots. The following practices help ensure counties cure more ballots:

- Make multiple attempts to contact voters using various methods, such as email and text
- Send cure letters with prepaid postage on return envelopes

Take active steps to ensure voter signatures are up to date

Having a current signature on file helps ensure counties can match a voter's signature. In Washington, if voters update their information with the Department of Licensing, this information, including their signature, is automatically updated in VoteWA. Voters can check the signature on file by simply looking at their licenses (see **Exhibit 9**). However, since these signatures are not always the best quality, other practices can help counties cure more ballots and prevent signature mismatches in the future. Most audited counties send signature update forms to groups of voters after elections.

Exhibit 9 – Signature records held by the state Department of Licensing are linked to the VoteWA system, allowing voters to check their signature on file by looking at their license or ID card

Source: "Reaching Out Summer 2021," Department of Licensing.

- After an election, send signature update forms to voters with mismatched signatures who did not respond to the cure letter, to voters whose signatures were accepted but appeared to be changing, or to voters who have recently changed their names

Conduct voter outreach using a variety of media to help ensure people are aware of voting processes

Outreach can help counties cover topics around critical voting requirements that help reduce ballot rejections; topics include deadlines, drop box locations and the requirement that the ballot envelope signature matches the signature on file in VoteWA. Using different media to conduct voter outreach helps ensure counties reach more voters and a variety of voters. Practices used include:

- Educate voters about the basics of voting, stressing the importance of the ballot envelope signature and how it will be compared to signature(s) on file as well as announcing deadlines. For example, King County does both on an insert it includes with all ballots. The insert suggests a voter can check their driver's license to see a current signature that officials will use to compare to the ballot envelope. Many counties also include reminders to sign the ballot envelope.
- Use a variety of media to reach voters, including social media, television, mailed voter pamphlets and direct outreach. Outreach could include holding mock elections in high schools or using radio ads to remind voters about election deadlines. Counties also use their official websites to inform voters about drop box locations, why ballots may be challenged and the process to resolve issues, and key dates (when ballots are mailed out, when drop boxes open, when ballots are due, and suggested deadlines for mailing ballots so they are postmarked timely).

Ensure accessible voting locations

While voters can return completed ballots, with prepaid postage, in a mailbox, doing so close to Election Day increases the risk that the ballot will be postmarked after Election Day or delivered after election certification. For example, a voter may deposit their ballot into a mailbox after the final pick up of the day on Election Day, giving them the false impression that they voted on time. Giving voters the option of equally convenient ballot drop boxes (as illustrated in **Exhibit 10**) may help more voters return ballots on time as election staff pick up ballots from most drop boxes up until the election deadline.

Exhibit 10 – Ballot drop boxes allow voters to securely return ballots at their own convenience without having to rely on the postal service

Source: Google Maps Street View (Longview, Cowlitz County, WA).

We compared voting locations in the 10 audited counties to voter addresses and found they all had a drop box or another voting option within a 15-minute drive for at least 70 percent of voters. Three counties had such locations for at least 90 percent of voters, and three other counties had them for at least 95 percent of voters.

- When deciding where to have voting locations, including ballot drop boxes, counties can be sure they help increase accessibility for more voters. Their decisions can make voting easier by taking into account factors like voter demographics, isolated geographic areas, access to public transit and parking, and drive-up options.

Adopting additional leading practices currently used by some Washington counties may help lower rejection rates and increase cure rates

While the practices described above were commonly used by most audited counties, the following practices were less common. These practices include contacting voters sooner and more often, educating them specifically about vote-by-mail requirements, and taking extra steps to ensure voter information is current. Layering additional leading practices that experts recommend could help improve the ballot review and curing processes. Some counties said they have already begun making changes to implement some of the audit's identified leading practices.

Contact voters sooner and in their preferred language to help increase responses to cure letters

To cure ballots, state law requires counties to mail cure letters and then to call any remaining voters with outstanding challenged ballots three days before election certification. Federal law requires jurisdictions that meet minimum minority-language thresholds to provide voting materials in different languages. Counties can go beyond state and federal laws by taking additional steps to reach voters with challenged ballots using the following practices:

- Contact challenged voters within a day of their ballot challenge using more immediate contact methods, such as emails, texts or telephone calls
- Provide cure letters in voters' preferred language

Proactively obtain voters' up-to-date contact information to increase chances of curing challenged ballots

Documenting voters' email addresses and telephone numbers from ballot return envelopes helps ensure counties have the most up-to-date way to reach them if issues arise (see sidebar). Some audited counties updated all voters' email addresses and phone numbers, while a few only did so for voters with challenged ballots. Counties can adopt the following practices to increase the likelihood of curing challenged ballots:

- Request updated email addresses, in addition to telephone numbers
- Update email addresses and telephone numbers from information collected from all ballot envelopes, not just from challenged ballots

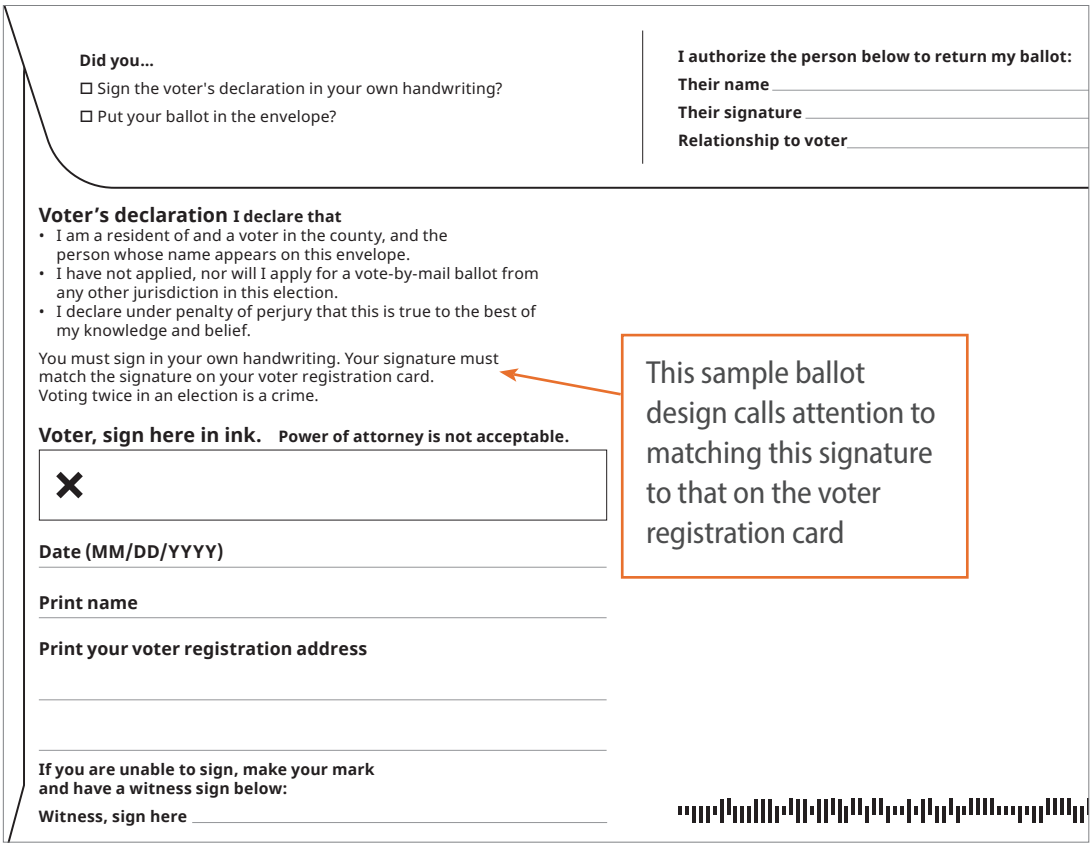
King County officials said that in 2018, when employees reviewed all ballot return envelopes, they found 30 percent to 40 percent of voters had new contact information. They found voters with up-to-date contact information were more likely to cure their ballots.

Ensure voters clearly understand how important their signatures are to successful voting

Though most audited counties had reminders to sign on ballot envelopes, it is also important that voters understand how officials will use their signature. Many counties conduct general outreach about the importance of signatures, but placing the information where it is most relevant (as shown in **Exhibit 11** on the following page) draws attention at the right step in completing the ballot.

- Printing information directly on the ballot envelope where voters need it can help voters sign in the right place and with a signature that matches the one on file

Exhibit 11 – Counties can help ensure voters provide a matching signature by printing requirements on the return envelope where voters sign



Source: "Best Practices for Envelope Design," Center for Civic Design.

Intentionally collect different versions of voters' signatures to help increase the likelihood of a match

Because each person's signature can vary, collecting multiple signatures from voters can help election employees better verify each voter's unique signature styles. Counties already receive voter signatures updated through the Department of Licensing, but these signatures are not always of the best quality. In addition, counties can:

- Collect several examples of a voter's signature during voter registration, curing processes, and on signature update forms by incorporating multiple places for voters to sign. In Washington, counties use voter registration and signature update template forms developed by the Secretary of State. Counties can work with the Secretary of State's office to update these forms to allow them to collect several examples of voters' signatures.

Take more steps to keep voters informed about vote-by-mail processes

Using a variety of educational and outreach efforts can help ensure counties reach more voters and advise them of critical voting information, such as the importance of their signatures, deadlines, and how the cure process works. All counties regularly conducted some informal outreach, but other practices counties could adopt include:

- Develop and implement a formal outreach plan to better target voter education and outreach needed in each county
- Provide information about signature challenges and the curing process on official websites
- After an election, notify voters if their ballots were not counted and explain why to help prevent problems during the next election
- Establish community partnerships to increase civic participation in elections. For example, one county collaborated with a local theater to announce voting deadlines on the theater's announcement board.

Use data to implement and track new practices aimed at reducing ballot rejection rates

Evaluating data allows counties to better identify groups with higher-than-average rejection rates, implement new practices, and track their success. As discussed earlier, some county officials gave examples of practices they said improved rejection rates, including for specific issues like late ballots. However, most counties did not track data from before and after implementing practices to measure success. To reduce rejection rates, counties could:

- Use data to identify issues that might cause higher rejection rates and address them accordingly through targeted outreach or new practices. For example, data might show a high number of unsigned ballots. A county could respond by adding "Don't forget to sign" on return envelopes in future elections.
- Use data to improve outreach efforts to groups of voters with higher-than-average rejection rates. For example, if data shows younger voters have higher-than-average rejection rates, a county could respond by targeting outreach to younger voters through social media.
- Monitor and track the success of new practices after implementing them. Counties should analyze how successful new practices were at achieving their intended purposes.

In the next chapter, we highlight some innovative approaches that aim to reduce rejection rates. However, they are less widely used and their effectiveness may not have been fully determined.

Counties could consider other innovative practices to reduce ballot rejection rates and disparities among counties and certain demographic groups

Result in brief

Other innovative practices could further reduce ballot rejection rates and disparities in rates among counties and certain demographic groups. This section of the report offers practices in three areas: operational practices, confirming voter identity and curing challenged ballots. Although Washington's elections may benefit from innovative practices, officials must first consider current regulations, available resources and voter needs.

Other innovative practices could further reduce ballot rejection rates and disparities in rates among counties and certain demographic groups

The audit identified some additional, sometimes innovative, practices that could offer counties ways to reduce ballot rejection rates, including disparities in rates between counties in the same state and demographic groups. The practices include strategies to:

- Ensure voters know the status of their ballots
- Reduce reliance on signatures to confirm identity
- Make it easier to cure a challenged ballot and ensure voters understand ballot review processes

In addition, there are practices that may help counties manage operational processes around elections to manage costs and close gaps in voting access.

Certain practices might benefit or reach specific demographic groups more than others. For example, younger voters may benefit more from technological advancements, while racial and ethnic groups may benefit more from specific community outreach. It is likely that combining different practices would help counties reach the most voters since strategies may affect voters differently. When considering technological advancements, election officials have raised concerns around ensuring that systems have appropriate security controls as well as ensuring voter access to new technologies.

The short descriptions below summarize practices other states use or which researchers have identified as worth exploring further; see the bibliography at the end of this report for more information. The practices are organized into three categories: operational processes, confirming voter identity and curing challenged ballot signatures.

Operational processes

Free up election resources by supplementing signature verification procedures with automated processes

To help reduce the manual work involved in signature review, some election offices use automated signature verification as part of their mail-in ballot processes. Signatures are scanned from ballot envelopes and digitally compared to voters' signatures on file, reporting whether they match and the confidence of a match. Election offices in Colorado, Florida, Oregon, and one county in Washington use such software for initial reviews of ballots; the results still require some manual review, particularly for signatures flagged by the software. Researchers are seeking ways to strengthen the reliability of automated technologies.

Use geospatial analysis to identify possible gaps in voting access

Geographical information system (GIS) analysis techniques can help election officials ensure all citizens have equal access to voting locations, which in turn improves the likelihood ballots are received on time. These software tools use specific criteria – such as voter demographics, mobility, geographic isolation and more – to determine the places with the greatest need for a ballot drop box. Many election offices, including King County and Pierce County, use GIS to help them make decisions about drop box locations.

Use grants to improve voter education and outreach

Some local election offices are limited in their voter education and outreach opportunities due to limited staffing or financial resources. Taking advantage of grants and similar funding can help them mitigate these limitations. For example, The Center for Tech and Civic Life awarded more than $350 million in grant funds across the country, including to some audited counties, to make improvements to elections processes like increasing voting access during the COVID-19 pandemic. Counties can use grant funds to develop more community involvement and education to address specific demographic groups including under-represented racial and ethnic groups. For example, King County provides grant funds to community organizations to better target voter education efforts to particular demographic groups.

Confirming voter identity

Reduce or remove reliance on signatures by verifying identity using other identifying numbers or processes

To verify voters' identities when they vote by mail, some states supplement signature review by using unique identification numbers connected to a ballot and a specific voter (see sidebar). Election officials can collect a unique identification number connected to a voter, such as driver's license numbers, identification card numbers, or partial Social Security number during voter registration or update processes. Voters then provide that number when they vote, and election officials confirm the information during the ballot review process. Having more information available to confirm a voter's identity may potentially reduce rejection rates, especially when signatures are insufficient for identity verification.

> Minnesota initially uses personal identification numbers to verify absentee ballots, and it only conducts signature verification if the identification number does not match the number on file.

Another method takes advantage of multifactor authentication (MFA) technology, which is already common in banking and online purchasing environments. MFA technology usually involves the verifying site sending a unique numerical code to the telephone number or email address associated with the customer's account. This code is then used to verify the identity of the person in question. In the setting of elections, voters could be sent a unique code using a trusted contact method that they then include when submitting their ballot.

Consider end-to-end verifiable voting to allow for electronic voting

Electronic voting is a potential solution used to cast and count votes, though it is not without controversy. Electronic voting systems can reduce the reliance on hand-written signatures. These systems may also subsequently reduce rejection rates due to missing signatures and signature mismatches because there is no need to sign ballots or for officials to manually review signatures on ballots to a signatures in voter files.

The technology and implementation for electronic voting systems is still relatively new and not without concerns about how to verify the identity of the voter and how to safeguard the voting system. A thorough consideration of the risks and benefits of various online voting platforms is necessary before proceeding.

To address some of these security concerns, an emerging security measure to consider is "end-to-end verifiable voting" which assigns an encrypted tracking number to ballots and provides voters with a "ballot receipt" that allows them to verify their vote was correctly recorded.

Curing challenged ballot signatures

Automatically notify voters of their ballot status so they can quickly address any issues

After a ballot is challenged, one important step is to tell the voter so the problem can be resolved. California, for example, makes this process seamless by recording all mail-in ballots in its voting system. The system automatically notifies voters through their preferred medium (email, text or telephone call) of their ballot status: accepted or challenged.

Reduce rejection rates by allowing voters to cure ballots through digital technologies

Some election offices already use digital technologies to engage voters in the cure process more easily and quickly. For example, digital document services use website portals to allow voters to securely access and sign cure forms online. Similarly, curing through mobile technology (see sidebar) gives voters the opportunity to review and submit necessary information through their phones or other mobile devices.

Colorado uses a program that allows voters to cure ballots through mobile technology. The program was made statewide for Colorado's 2020 general election, and about 11,000 voters used it to cure their ballots.

Washington's elections may benefit from innovative practices, but officials must first consider current regulations, available resources and voter needs

Some of these innovative practices could benefit election processes in Washington. Practices that other election jurisdictions have successfully applied could help Washington counties reduce the disparities in rejection rates between racial and ethnic groups, age groups and genders. For example, election offices can improve cure rates, particularly among younger voters, by using digital technology that allows voters to cure their ballots online. Racial and ethnic groups may benefit more from specific community outreach.

However, the state and individual counties must consider many factors before putting a new practice into action. Election officials must follow current laws and regulations, work within available resources, ensure appropriate security controls are in place, and consider how practices affect voters in terms of access, convenience, equity and privacy. A practice may benefit one aspect of elections, but negatively affect others: counties need to balance the pros and cons of each before proceeding. Any effort to implement an innovative practice should be well planned to ensure it meets its intended purpose without prompting an unintended consequence that may have a negative effect on other aspects of the voting process.

State Auditor's Conclusions

In every election, some mail-in ballots will be rejected, whether because the ballot is late, it is unsigned, or the voter's signature does not match what is on file. In the context of the total number of mail-in ballots cast, the number that are rejected is still quite low – less than 1 percent in Washington for the 2020 general election. However, the rate at which ballots are rejected varies for different counties and for different groups of voters.

Disparities in rejection rates for different racial and ethnic groups are unacceptable, and we explicitly looked for bias in the decisions to accept or reject individual ballots, to see if that could help explain the differences. We found no evidence of bias in those decisions. While that is good news, it also means we are not able to explain what causes rejection rates to vary for these groups of voters.

A takeaway from this audit is that we overwhelmingly concurred with counties' decisions about which ballots to accept and which to reject. In addition, for the 10 counties we looked at, all met state requirements related to signature verification. In fact, some counties went beyond those requirements and adopted leading practices we identified.

Given the importance of public confidence in elections, and the seriousness of the disparities identified, I encourage counties to seriously consider some of the more innovative and promising practices detailed in this report.

Recommendations

Guidance for all counties in Washington

We consider the audit results so broadly applicable that it is in the state's best interest for all counties to consider implementing the practices highlighted in this report. In doing so, counties will also need to take into consideration current laws, available resources, and potential effects on voters. Specifically, we recommend each county take the following actions.

1. Educate voters about the importance of ballot signatures matching what is on file. Possibilities include:
    a. Ensure ballot return envelopes clearly state that the voter's signature will be compared to signatures on the voter's registration file
    b. Conduct voter education and outreach that clearly explain signature verification requirements, including that signatures on return envelopes must match the signatures on the voter registration file
    c. Provide information on county's official website explaining why ballots are challenged and the process for curing a challenged ballot
2. Work within county resources to increase the rate voters will cure their ballots. Techniques should include:
    a. Contact voters by telephone calls, emails or text messages the day ballots are challenged, to notify them of their ballot status as soon as possible
    b. Make multiple attempts to contact voters using various contact methods, such as calling or emailing voters
    c. Send cure letters in voters' preferred languages
3. Use data to implement and track new practices. Techniques should include:
    a. Identify issues that might cause higher rejection rates and address them accordingly, such as adding relevant text to ballot return envelopes
    b. Use data to identify groups of voters with higher-than-average rejection rates and increase outreach efforts for these groups
    c. Monitor and track success of new practices after implementing them

4. Increase voter education and outreach efforts. Tactics to consider include:
    a. Develop formal outreach plans that are informed by voter rejection rates to target efforts around groups with higher rejection rates
    b. Establish community partnerships, especially if the county has limited resources
5. Collect several signature samples from voters to keep in voter registration files. Options include:
    a. Work with the Secretary of State to provide voters with multiple signature blocks to sign on voter registration and signature update forms
    b. Contact voters after elections to request new signatures
6. Develop written policies and procedures that reflect both state law and county practices for signature verification, curing and processing ballots.

Agency Response

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January 19, 2022

The Honorable Pat McCarthy
Washington State Auditor
P.O. Box 40021
Olympia, WA 98504-0021

Dear Auditor McCarthy,

The Washington State Association of County Auditors (WSACA) and its 39 members (County Auditors and Directors of Elections) appreciate the opportunity to review and respond jointly with the Office of the Secretary of State to the State Auditor's Office (SAO) performance audit report, "Evaluating Washington's Ballot Rejection Rates."

County elections offices and the Office of the Secretary of State are responsible for administering fair, accessible, and accountable elections, following federal, state, and local laws and rules and implementing best practices. We share the goal of counting every valid ballot and improving the voting process for all voters.

We agree with the SAO finding that ballot rejection rates in Washington counties are "quite low" – less than 1 percent in the 2020 General Election. This accomplishment is the result of years of continual improvement, evaluation, and collaboration between County Auditors and the Office of the Secretary of State.

In the review of a random sample of more than 7,200 ballot signatures, SAO auditors "overwhelmingly concurred with counties' decisions about which ballots to accept and which ballots to reject," finding "no evidence of bias in [acceptance/rejection] decisions." Our processes, which include having multiple trained elections workers check each signature rejected because of mismatch, contacting all voters who have their signature rejected, and providing opportunities to resolve signature issues, ensure this lack of bias.

The audit identified six recommendations to help reduce ballot rejection rates and variation between counties. As the audit indicates and we can attest, counties have already implemented many of these strategies.

As we continue to look for opportunities for improvement through the recommendations of this report and other practices, we agree with the state auditors' caution that "any effort to implement an innovative practice should be well planned to ensure it achieves the intended purpose without prompting an

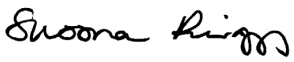
unintended consequence that may have a negative effect on other aspects of the voting process."

Even with improvements, it is important to recognize that we will never reduce the number of rejected ballots to zero. The signature checking process exists to confirm the validity of each ballot, confirming that it was cast by the voter. Because voting is a human process, a small number of voters or unregistered people will fail to execute the voter instructions, turn their ballot in too late, or sign an envelope that was not issued to them.

County Auditors and Directors of Elections and the Office of the Secretary of State continue to be concerned about how rejection rates may impact different communities. The SAO audit found no evidence of implicit bias, agreed with the determinations made in a 7,200 sample of signature verifications, and found many counties going above and beyond legal requirements. Even so, we want to discover and adopt strategies to increase ballot acceptance rates among the racial, ethnic, and language groups that appear to be experiencing a disproportionate rate of rejection, whether because the ballots arrive too late or because signatures can't be verified.

We appreciate the time SAO staff spent learning about the vote-by-mail process and performing the audit. County Auditors and Directors of Elections and the Office of the Secretary of State remain committed to our goal of counting every valid ballot and improving the voting process for all voters.

Sincerely,



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Appendix A: Initiative 900 and Auditing Standards

Initiative 900 requirements

Initiative 900, approved by Washington voters in 2005 and enacted into state law in 2006, authorized the State Auditor's Office to conduct independent, comprehensive performance audits of state and local governments.

Specifically, the law directs the Auditor's Office to "review and analyze the economy, efficiency, and effectiveness of the policies, management, fiscal affairs, and operations of state and local governments, agencies, programs, and accounts." Performance audits are to be conducted according to U.S. Government Accountability Office government auditing standards.

In addition, the law identifies nine elements that are to be considered within the scope of each performance audit. The State Auditor's Office evaluates the relevance of all nine elements to each audit. The table below indicates which elements are addressed in the audit. Specific issues are discussed in the Results and Recommendations sections of this report.

I-900 element	Addressed in the audit
1. Identify cost savings	**No.** This audit analyzed ballot rejection rates and did not focus on cost savings.
2. Identify services that can be reduced or eliminated	**No.** Accepting and rejecting ballots is necessary to ensure the integrity of elections.
3. Identify programs or services that can be transferred to the private sector	**No.** Elections are performed solely by county officials. There are no indications that privatizing these activities is a best practice.
4. Analyze gaps or overlaps in programs or services and provide recommendations to correct them	**No.** Elections are performed by county officials.
5. Assess feasibility of pooling information technology systems within the department	**No.** Counties already use and input voter information into a single information technology system.
6. Analyze departmental roles and functions, and provide recommendations to change or eliminate them	**No.** This audit analyzed ballot rejection rates and did not focus on departmental roles and functions.

I-900 element	Addressed in the audit
7. Provide recommendations for statutory or regulatory changes that may be necessary for the department to properly carry out its functions	**No.** While the audit makes recommendations for county procedures to improve performance, nothing we recommend is necessary to properly carry out electoral functions.
8. Analyze departmental performance data, performance measures and self-assessment systems	**Yes.** The audit analyzed ballot rejection rates statewide and among different demographic groups and counties.
9. Identify relevant best practices	**Yes.** The audit lists and recommends leading practices which would help decrease the number of rejected ballots.

Compliance with generally accepted government auditing standards

We conducted this performance audit under the authority of state law (RCW 43.09.470), approved as Initiative 900 by Washington voters in 2005, and in accordance with generally accepted government auditing standards as published in *Government Auditing Standards* (July 2018 revision) issued by the U.S. Government Accountability Office. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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Appendix B: Scope, Objectives and Methodology

Scope

The state Legislature required the State Auditor's Office to conduct a performance audit reviewing local government processes for rejecting ballots. The audit was conducted in two phases. First, an analysis of statewide voter data to determine whether ballot rejections disproportionately affect certain demographic groups. Second, a review of practices and procedures at a sample of 10 counties, examining how local governments count ballots and determine the accuracy of signatures.

The mandate required us to review the procedures and practices at five counties with higher rejection rates – Adams, Benton, King, Kittitas and Whitman – and five counties with lower rejection rates – Asotin, Cowlitz, Mason, Klickitat and San Juan. We selected these counties by reviewing rejection rates for 2014 through 2019 and performing various analyses.

We excluded late ballots from our analysis because of data limitations and equivalency issues with in-person voting. Although county election officials can reject ballots for several reasons, 97 percent are rejected because they are late (postmarked after Election Day), unsigned, or the ballot signature does not match the voter signature on file.

Objectives

The purpose of this legislatively mandated performance audit is to review processes used in counties for identifying, correcting and rejecting ballots; compare county processes to laws, leading practices and to each other; examine the accuracy of ballot rejections; make recommendations to improve processes for rejecting ballots; and analyze the demographics of voters whose ballots were rejected. The audit addresses the following objectives::

1. Are certain demographic groups more likely to have their ballots rejected?
2. Are ballots appropriately rejected?
3. Do county practices and procedures for rejecting ballots follow the law and leading practices?
4. What other practices or strategies could counties use to reduce ballot rejection rates and the disparities in rates among counties and demographic groups?

For reporting purposes, the audit results have been organized into key findings. The messages relate to the original objective as listed on the following page.

- The likelihood a ballot was rejected was highly correlated with the county where it was cast (pages 13-16) – This finding addresses Objectives 1 and 2.
- Ballots cast by members of certain demographic groups – younger voters, male voters, and voters belonging to certain racial and ethnic groups – were more likely to be rejected (pages 17-23) – This finding addresses Objectives 1 and 2.
- Selected audited counties, for the most part, followed state law and used many leading practices (pages 24-32) – This finding addresses Objectives 3 and 4.
- There are a number of innovative practices counties could consider to reduce ballot rejection rates and disparities (pages 33-36) – This finding addresses Objective 4.

Methodology

We obtained the evidence used to support the findings, conclusions and recommendations in this audit report during our fieldwork period (August 2020 to September 2021), with some additional follow-up work afterward. This section summarizes the work we performed to address the audit objectives. Research materials used in each objective are listed in the bibliography at the end of the report.

To answer the audit questions, we performed research, and reviewed and analyzed voter data from the 2020 general election collected by county elections officials and maintained by the Washington Secretary of State. One, we identified the counties that consistently had the highest and lowest rejection rates from 2016 through 2019. Two, we compared each county's general election rate to the state average using a z-score and identified the counties that consistently had the highest and lowest z-scores for those years. Third, we compared each county's general election rejection rate to the state average using a regression analysis that used each rate as the dependent variable and the counties and dummy variables for off year and presidential elections as the independent variables. We selected the top five highest and lowest coefficients as they are indications of values statistically most different than the average. Next, we removed any resulting counties with a population less than 10,000 to help ensure we could collect sufficient information. Last, we identified the counties that most consistently were identified in the three analyses and had populations over 10,000.

We reviewed election materials, conducted interviews and visited these counties during special and primary elections held in 2021, to witness ballot review and curing processes. We did not observe an election at Asotin County as the county did not hold a special or primary election during our audit period.

County election officials were sometimes inconsistent in how they counted late ballots and entered them into the database. For instance, we found one larger county that had no late ballots in the data when such ballots usually account for a significant portion of rejected ballots. Some elections officials entered late ballots into the system at different times or categorized them differently. In addition, there is no cut-off date in statute for when officials should stop counting late ballots. Officials noted that ballots can come weeks, months or even years after the election.

We have summarized the work we performed to address the audit objectives in the following sections.

Objective 1: Are certain demographic groups more likely to have their ballots rejected?

To address this objective, we analyzed rejection rates for different demographic groups and characteristics and performed a logistic regression analysis on these groups. The latter analysis determines whether there is a correlation between the groups and the likelihood of rejection while accounting for the other variables included. First, we identified variables associated with ballot rejection. Because county and state elections officials do not collect information on a voter's race or ethnicity, we had to use a method to predict voters' races and ethnicities. We then calculated ballot rejection rates for each variable and included all the variables in a logistic regression.

Identified variables associated with ballot rejection

In order to determine whether certain demographic groups are more likely to have their ballots rejected, we first needed to identify the demographic variables and characteristics to analyze. We interviewed officials from county auditors' offices, the Secretary of State and the Office of Financial Management to gain an understanding of available data. We reviewed studies and articles about mail-in ballot rejections and found several answering questions similar to our objectives. We noted all of the variables these studies included in their analyses. We then determined which variables and characteristics were available to analyze. The variables we included in our review are:

- Gender
- Age
- Predicted race and ethnicity
- Income
- Ballot language (only analyzed in King County because of demographic characteristics)
- Voting history
- Location
- Uniformed and Overseas Citizens Absentee Voting Act (UOCAVA) status
- Name characteristics
- Education level

Notably, county elections officials and the Secretary of State do not collect data on voters' race and ethnicity or whether people needed help to cast their ballots. Researchers from the University of Florida and Dartmouth College found a statistically significant relationship between these two variables and whether the voter's ballot was rejected. There may be additional variables associated with ballot rejection that we did not identify.

Predicted a voter's race and ethnicity

Because other studies found a statistically significant relationship between race and ballot rejection, we wanted to include the variable in our analysis. As noted earlier, because Washington elections officials do not collect race and ethnicity information on voters, we used a predictive method – the Bayesian Improved Surname Geocoding method – to predict a voter's race and ethnicity. This approach has been used by research institutions and other government agencies, including the RAND Corporation and the Consumer Financial Protection Bureau, when individuals' races and ethnicities were unavailable.

The method uses Census information on surnames and the racial and ethnic makeup of geographic locations to predict someone's race.

The method applies Bayes' Theorem by taking the percent of racial/ethnic groups with a particular name and living in a particular area to make a prediction of any person's race or ethnicity. For example, considering only last names, if 70 percent of residents with the last name "Johnson" indicated they were white in the U.S. Census, and 30 percent indicated they were Black, the method would calculate a 70 percent probability that a voter named "James Johnson" is white. However, the method also considers the racial makeup of the individual's location. If residents in the area James Johnson lives in are predominantly Black, the calculation would increase the probability the voter is Black. The method determines the probability a person is a member of six racial/ethnic groups: Hispanic; non-Hispanic white; non-Hispanic Black; non-Hispanic Asian/Pacific Islander/Native Hawaiian, non-Hispanic Native American/Alaska Native, and non-Hispanic multiracial.

We predicted the race and ethnicity for more than 99 percent of the voters. Typically, the method accounts for 90 percent of names. But by following ideas drawn from a private study published in Harvard University's Dataverse (a repository of academic research), we were able to match additional names by incorporating first name data into our analysis. The RAND Corporation estimates that the method is between 90 percent and 96 percent accurate when predicting Hispanic, white, Black and Asian/Pacific Islander individuals. It is far less accurate for Native Americans and multiracial individuals.

Calculated rejection rates

To determine whether ballots cast by voters from certain demographic groups were more likely to be rejected, we first calculated ballot rejection rates for each variable we identified that was associated with ballot rejection. To do this, we created new categories of variables (age groups, for example, using the voter's date of birth) and cleaned up values for existing categorical variables such as ballot language (consolidating values like "Vietnamese" and "VIETNAMESE," and marking all null values as English-language ballots). Creating categorical variables allowed us to compare the rejection rates of the different values in a particular demographic group. For example, we compared the rejection rates of voters living in Washington, voters living out of state, and voters living overseas to see whether there were differences.

Ran a logistic regression

To determine whether ballots from certain demographic groups were more likely be rejected, we built a logistic regression model using the variables we created in the previous step. Logistic regression tests for the relationship between variables and an outcome. In this case, we tested for variables associated with a voter's ballot being rejected during an election. Often these variables are somewhat related, such as age and how many times a voter has submitted a ballot. Regression analysis provides an indication of how significant a variable is to the outcome while taking into account the other variables in the model. In the previous example, the regression model would determine whether there was a relationship between age and rejection while accounting for people's voting history as well as every other variable in the model.

We may not have identified every variable associated with ballot rejection. If unknown variables were included in our regression model, it could change the correlation between certain variables and ballot rejection. However, our model included every variable available to us that was identified and used in earlier research surrounding ballot rejection rates. See Appendix C for details about our logistic regression model.

Objective 2: Are ballots appropriately rejected?

During the 2020 general election, county officials rejected ballots for three main reasons: the ballot was received or postmarked after the election closed, it was missing a signature, or the signature on the ballot did not match the voter's signature on file. State law requires these ballots be rejected; the latter two reasons may be cured by the voter.

Reviewed late ballots and unsigned ballots

To determine if ballots rejected for being late or for missing signatures were appropriately rejected, we attended county canvassing board meetings in 2021 special and primary elections and observed as canvassing board members reviewed ballots and confirmed they were unsigned or had late postmarks. Ballots that were returned to drop boxes late were also rejected. We visually confirmed that these ballots were unsigned or had late postmarks.

At King County, the board rejects ballots in batches, which the law allows. We visually confirmed late ballots had postmarks after Election Day at King County and observed the person sorting envelopes placing all unsigned ballots in a separate pile. King County employees also gave us the report they share with the canvassing board for batch rejections. Asotin County did not hold any elections during our review period so we were unable to visually confirm rejected ballots from that county.

Reviewed accepted ballots and those rejected for mismatched signatures

To determine if accepted ballots and those rejected for mismatched signatures were appropriately accepted or rejected, we took a statistically significant, random, stratified sample of ballot envelopes that included the voter signature and which were accepted by counties or rejected by counties for mismatched signature. We then extrapolated results to the population using the statistical tool RatStats. This sample was drawn from 16 counties that use envelope sorters, which take images of the ballot signature and store them in VoteWA. (The remaining counties do not keep images of ballot signatures.) The ballots from these 16 counties made up 86.8 percent of the total ballots cast during the 2020 general election. We used a stratified random sample to obtain signatures belonging to particular minority groups and a mix of urban and rural voters.

After obtaining the signature images from the Secretary of State, we ran the image sets of ballot signatures and the signatures on file through automatic signature verification software called SignatureXpert, created by Parascript. We manually reviewed all signatures where SignatureXpert made a determination that differed from that made by the counties, as well as all signatures that it warned could be a forgery. Parascript recommends manually reviewing all signatures the software deems forgeries.

The audit team members then used information from the signature verification training provided by the Washington State Patrol (the same training county signature reviewers take) to conclude on whether a signature was accepted or rejected appropriately on a sample of 7,257 signature pairs out of a population of 3,602,353. Each signature pair was comprised of the signature on the ballot envelope and another signature on file (or multiple) from VoteWA.

First, we identified ballots that were inconclusive or where a trained reviewer would need to use more judgment when deciding if the signature on the ballot envelope matched the signature on file in VoteWA. These inconclusive signatures are where we considered it was possible that unconscious bias could affect whether the reviewer accepted or rejected the ballot.

To do this, two or more audit team members reviewed each signature pair. If at least one audit team member made a decision that conflicted with the county's decision we determined that the signature pair was inconclusive. We identified 542 inconclusive signature pairs.

Second, we determined the signature pairs we ultimately disagreed with. If two audit team members disagreed with the county's decision, we forwarded the signatures to the Secretary of State's Office for review. When two auditors disagreed with each other, a third auditor reviewed the signature and made the determining decision. Using this process, auditors disagreed with the decision made by counties on 201 ballots. Two employees with experience in reviewing signatures also reviewed the signature pairs. They ultimately disagreed with the counties' decisions on 158 signatures.

Last, we analyzed all 542 inconclusive signatures and the signatures we ultimately disagreed with to determine if there were any patterns that indicated potential unconscious bias. We looked for demographic patterns amongst voters and patterns that might indicate where reviewers disagreed with counties at a higher or lower rate.

Objective 3: Do county practices and procedures for rejecting ballots follow the law and leading practices?

To address this objective, we compiled a list of laws and leading practices and compared them to counties' written policies and procedures as well as actual practices. We first reviewed relevant laws (the Revised Code of Washington) and regulations (the Washington Administrative Code). Our literature review identified leading practices around methods to improve the ballot processing and curing processes, and to improve voter understanding of election processes. We reviewed websites and studies conducted by groups such as the U.S. Election Assistance Commission, Washington Secretary of State, university research centers, Brennan Center for Justice, and the National Conference of State Legislatures. We then compared relevant state laws and leading practices to the current procedures and practices of the 10 selected counties over the last six general elections prior to 2020. We learned about each county's practices by conducting the following fieldwork:

1. We met with employees from each county twice to learn about their current procedures and practices. We also sought to learn about each county's outreach efforts to educate voters.
2. We conducted site visits during county elections to observe their ballot processing and cure process. This included observing election employees review, accept or flag questionable voter signatures, as well as sending out cure letters when they challenged ballot signatures. We did not visit Asotin County as it did not hold an election during our audit period.
3. We conducted site visits during county canvassing board meetings to observe board members' processes to review challenged ballots.
4. We requested and reviewed documentation from each county, including:
    a. County procedures for processing and curing ballots
    b. Samples of mailed ballot materials, including the envelope, ballot, ballot sleeve and return envelopes
    c. Samples of cure letters and forms
5. We reviewed each county's official election website and social media accounts to learn about the types of information available to voters in that jurisdiction.

6. We reviewed each county's ballot drop box locations for requirements and leading practices using ArcGIS, Google Earth and Bing Maps.

See Appendix D for a comparison of leading practices to each county's practices.

Objective 4: What other practices or strategies could counties use to reduce ballot rejection rates and the disparities in rates among counties and demographic groups?

To find other practices or strategies that counties could use to reduce ballot rejection rates, we researched innovative practices, including those requiring systemic changes that could improve rejection rates or cure rates. We distinguished these practices from leading practices as their use is not widespread, and they may require considerable funding to implement.

Work on internal controls

To answer Objective 2, we reviewed internal controls related to county reviews of ballot return envelopes and voter signatures. We assessed the design of these internal controls by:

- Comparing state laws and rules to county policies and procedures on ballot processing and review

We also assessed the effectiveness of the internal controls by:

- Observing county employees as they processed and reviewed ballots (includes the ballot curing process)
- Observing county canvassing board members verify that challenged ballots should be rejected
- Verifying that ballots rejected for being unsigned and arriving late were missing signatures or had late postmarks
- Reviewing a random sample of signatures on return envelopes and registration files from accepted ballots and those rejected for mismatched signatures, in order to confirm the signatures were the same or different

Appendix C: Logistic Regression Model

Scope

We conducted logistic regression analysis to explore how much variation in ballot rejection rates can be explained by each voter characteristic independently, as well as the total degree of variation explained by the full set of voter characteristics overall.

Although logistic regression analysis allows for a deeper exploration of the relationship between a particular variable and an outcome, it is still a correlational technique. Regression analysis does not establish a causal relationship between a particular variable and an outcome.

We excluded ballots rejected for late return from the analyses because data on these ballots were sometimes inconsistent between counties.

Methodology

We explored the relationship between a variety of demographic characteristics of voters and the likelihood that their ballot will be rejected through calculating descriptive statistics. These analyses are described in Appendix B.

However, voters possess a variety of characteristics that combine and influence the likelihood that their ballot will be rejected. For instance, voters in some counties had higher rejection rates than in other counties. However, the former counties could potentially have a younger population with less voting experience that could lead to higher rejection rates.

We conducted logistic regression analysis to explore how much each characteristic independently contributes to the likelihood of a ballot being rejected, once other characteristics were taken into account. Logistic regression analysis also allowed us to determine how much the entire set of characteristics under consideration contributed to the likelihood of a ballot being rejected, and what remaining variation has not been taken into account.

We explored specific rejection reasons as well as rejections for any reason

In the logistic regression model, we assigned ballot rejection a value of one, and ballot acceptance a value of zero. We ran a model to determine factors associated with ballot rejection, regardless of the reason. We also ran models to determine factors associated with the most common ballot rejection reasons – mismatched signature and unsigned ballot.

We analyzed numerous factors related to ballot rejection

We reviewed literature to determine factors related to ballot rejection and tested the following predictors, either directly using voter data from the Secretary of State, or through publicly available sources. **Figure 1** on the following page lists these factors.

Figure 1 – Explanation of factors used in analysis

Factor	Explanation
County	County where the ballot was processed
UOCAVA	Uniformed and Overseas Citizens Absentee Voting Act: The voter is listed as eligible for voting assistance for service members, their families and overseas citizens under the Act.
Location	Voter location based on the voter registration record contains one of the following values:
in state	– Voter's ballot mailing address is not out of country or in another US state or territory
out of state	– Voter's ballot mailing state is other than 'WA' or is in a US territory
overseas	– Voter's ballot mailing country has a non-null value
Gender	Voter's gender as listed in the voter registration record; missing values were categorized as "unknown"
Race/Ethnicity	Highest probability for race/ethnicity, based on the voter's surname in the voter registration record and the geocoded census block group for the voter's physical address as listed in their voter registration record
Age	Voter's age as of the date of the 2020 general election, based on the date of birth listed in the voter's registration record, then grouped into age ranges
Translation	Voter requested to receive the ballot in a language other than English (included only in separate analysis of King County voters)
Name complexity	Since names are made up of letters and other characters, researchers from the University of Florida and Dartmouth College suggested that voters with longer names or more unique characters may be more likely to have their ballots rejected than others. Separate fields were created for each of the following unique name characteristics:
Length	– Total number of characters in the voter's first and last name as listed in their voter registration record, truncated at 4 characters and 25 characters
Space	– Voter has a space in the first, middle or last name
Suffix	– Voter has a suffix (JR, SR, II, III, IV, or V) in the last name
Hyphen	– Voter has a hyphen in the first, middle or last name
Apostrophe	– Voter has an apostrophe in the first, middle or last name
Census tract demographics	Statistics about the area where the voter resides, based on census data and the voter's physical address as listed in the voter registration record; separate fields were created for each of the following characteristics:
Median Income	– Median household income of residents in the voter's census tract
Educational attainment	*High school* – Percentage of residents with high school degree, equivalency, college experience, college degree or professional degree
	4-year college – Percentage of residents with Bachelor's, Master's, doctorate or professional degree
Voter history	Voter's prior experience with voting
# of times voted	Number of times the voter has cast a ballot for a previous election (since the 2011 Primary), according to records maintained by the Secretary of State
Rejected primary	Whether the voter's ballot was rejected during the 2020 primary election for a reason other than being unreturned, "undeliverable" or "too late"

Results

Because the data includes over four million ballots, statistical significance was easy to obtain. Therefore, only those results that were highly statistically significant and consistent with hypotheses proposed by other researchers are discussed in the report. Complete results of the regression analysis are listed in **Figure 2** (over the following several pages).

Our logistic regression results showed the county where the ballot was cast and certain voter characteristics were correlated with the likelihood of ballot rejection independent of related characteristics

In the following tables, p-values, a measure of statistical significance, are indicated by deeper colors highlighting particular factors. The lower the p-value, the greater the indication that there is a strong relationship between that factor and the ballot being rejected that likely goes beyond coincidence.

The odds ratio is a measure indicating the odds an outcome occurs when compared to another factor. The values shown in the rows separating each grouping of results have an odds ratio of one and are the comparison groups in our model. Comparing the odds ratios of other values to the comparison group shows the increased or decreased likelihood of rejection. For instance, Adams County has an odds ratio of 3.238 and Yakima County (the comparison group) has an odds ratio of one. Therefore, ballots cast in Adams County have a 3.238 times greater chance of rejection than ballots cast in Yakima County (3.238/1 = 3.238). Yakima County was selected as the comparison county because it had the lowest likelihood of ballot rejection, with a non-zero value for each type of rejection reason. Columbia County did have a lower likelihood of ballot rejection than Yakima, but had no rejections for some of the rejection reasons.

Figure 2 – Logistic regression results

The **darker orange** a cell, the greater the statistically significant correlation with ballot rejection.
Lightest: p < 0.05; Midtone: p < 0.01; Darkest p < 0.001

Variable	Any Reason		Signature Mismatch		Unsigned	
	Odds Ratio	Standard Error	Odds Ratio	Standard Error	Odds Ratio	Standard Error
Comparison county = Yakima						
Adams	3.238	0.443	7.545	1.228	0.538	0.225
Asotin	3.912	0.49	8.044	1.302	0.695	0.21
Benton	3.403	0.245	6.956	0.746	1.253	0.141
Chelan	1.404	0.153	2.548	0.378	.613	0.114
Clallam	4.415	0.376	9.614	1.147	1.375	0.195
Clark	3.328	0.222	7.814	0.796	.556	0.061
Columbia	0.322	0.322	*see note 1*	--	0.392	0.394
Cowlitz	2.276	0.195	5.212	0.617	.464	0.082
Douglas	1.055	0.159	1.248	0.287	0.935	0.19
Ferry	1.7	0.525	3.228	1.262	0.539	0.315
Franklin	4.677	0.525	9.398	1.032	1.893	0.235
Garfield	2.433	1.234	7.255	0.87	*see note 2*	--
Grant	1.927	0.182	4.480	0.558	.353	0.082
Grays Harbor	2.524	0.248	5.116	0.683	0.992	0.161
Island	3.688	0.319	7.095	0.87	1.540	0.209
Jefferson	2.804	0.376	3.538	0.737	1.629	0.299
King	4.625	0.293	9.568	0.952	1.644	0.146
Kitsap	4.589	0.318	11.752	1.218	.402	0.057
Kittitas	5.930	0.513	13.790	1.635	1.416	0.237
Klickitat	2.901	0.4	6.941	1.164	0.657	0.198
Lewis	2.950	0.26	7.267	0.865	.531	0.102
Lincoln	4.442	0.721	12.061	2.22	0.249	0.177
Mason	2.473	0.246	5.796	0.757	.421	0.099
Okanogan	7.220	0.625	18.319	2.151	.536	0.141
Pacific	3.728	0.472	8.687	1.383	0.96	0.236
Pend Oreille	1.273	0.319	1.76	0.647	0.83	0.286
Pierce	2.856	0.187	6.876	0.694	.388	0.042
San Juan	2.322	0.433	5.839	1.273	.381	0.174
Skagit	3.401	0.263	6.586	0.743	1.480	0.177
Skamania	2.100	0.42	3.691	0.969	0.679	0.264
Snohomish	4.767	0.308	12.068	1.21	.282	0.033
Spokane	2.503	0.174	5.779	0.602	.555	0.062
Stevens	1.600	0.21	3.245	0.551	.569	0.134

Figure 2, *continued*

The **darker orange** a cell, the greater the statistically significant correlation with ballot rejection.
Lightest: $p < 0.05$; Midtone: $p < 0.01$; Darkest $p < 0.001$

Variable	Any Reason		Signature Mismatch		Unsigned	
	Odds Ratio	Standard Error	Odds Ratio	Standard Error	Odds Ratio	Standard Error
Thurston	2.755	0.198	6.140	0.654	.648	0.079
Wahkiakum	6.460	1.26	18.605	3.962	0.252	0.253
Walla Walla	1.911	0.216	1.961	0.362	1.370	0.216
Whatcom	2.571	0.191	5.123	0.562	0.986	0.114
Whitman	3.226	0.338	8.512	1.127	.313	0.103
Uniformed and Overseas Citizens Absentee Voting Act (UOCAVA) status						
Eligible	1.049	0.043	0.946	0.044	1.244	0.123
Location (comparison = in-state)						
Out of state	.872	0.045	.758	0.046	1.255	0.144
Overseas	.796	0.067	.595	0.066	1.324	0.205
Gender (comparison = female)						
Male	1.421	0.017	1.384	0.019	1.663	0.05
Other	0.854	0.239	0.819	0.249	1.413	1.001
Unknown	1.059	0.034	0.991	0.036	1.149	0.095
Race/Ethnicity (comparison = white)						
Black	1.945	0.094	2.082	0.109	1.246	0.166
Hispanic	1.275	0.028	1.283	0.031	1.209	0.066
Asian/Pacific Islander	1.212	0.028	1.307	0.033	.844	0.053
Native American	1.817	0.548	1.138	0.476	4.176	1.899
Multiple	--	--	--	--	--	--
Unmatched	1.444	0.068	1.474	0.076	1.246	0.153
Age (comparison = 18-21)						
22-25	0.969	0.02	0.996	0.023	1.061	0.067
26-29	.832	0.018	.855	0.02	0.953	0.061
30-44	.571	0.01	.561	0.011	.839	0.044
45-64	.388	0.008	.336	0.008	0.915	0.049
65+	.364	0.01	.248	0.009	1.096	0.066
Name complexity						
Length	1.012	0.002	1.017	0.003	0.998	0.006
Space	0.989	0.026	1.005	0.029	.846	0.063
Suffix	2.529	0.912	1.942	0.885	3.758	2.685
Hyphen	0.987	0.04	0.959	0.043	1.049	0.107
Apostrophe	0.955	0.132	0.933	0.142	1.152	0.408

Figure 2, *continued*

The **darker orange** a cell, the greater the statistically significant correlation with ballot rejection.
Lightest: $p < 0.05$; Midtone: $p < 0.01$; Darkest $p < 0.001$

	Any Reason		Signature Mismatch		Unsigned	
Variable	**Odds Ratio**	**Standard Error**	**Odds Ratio**	**Standard Error**	**Odds Ratio**	**Standard Error**
Census tract demographics						
Median income	1.000	0	1.000	0	1.000	0
High school	.400	0.054	.339	0.052	0.656	0.196
4-Year college	.527	0.032	.463	0.031	0.822	0.116
Voter history						
# of times voted	.773	0.002	.761	0.003	.803	0.004
Rejected primary	3.852	0.148	4.247	0.172	1.125	0.189
Constant	***.016***	***0.002***	***.007***	***0.001***	***.005***	***0.001***
Number of ballots	**4,144,933**		**4,144,893**		**4,145,910**	

Data notes: Late ballots were excluded. Unmatched ethnicity means the race/ethnicity for the surname could not be determined. Only a very small number of ballots were associated with a multiple race/ethnicity, and none of these ballots were rejected.

1. Columbia County did not reject any ballots for signature mismatch.
2. Garfield County did not reject any ballots for being unsigned.

Results, continued

We analyzed King County voters who requested ballots in different languages

We repeated the logistic regression models for just King County in order to determine if there was a relationship between voters who requested a ballot in a foreign language and the rejection rate. King County meets thresholds in two languages and is required by federal law to provide voters with a translated ballot in those languages as well as an additional two per county code.

A logistic regression analysis was conducted for just King County voters to determine the relationship between ballot rejection rate and non-English speaking voters. Casting a ballot in a language other than English was associated with a higher likelihood of ballot rejection for signature mismatch, even after other demographic characteristics had been taken into account. Results of this analysis are shown in **Figure 3**, over the next two pages.

Figure 3 – Logistic regression results for King County show a statistically significant relationship between voters who requested ballots in languages other than English and ballot rejection

The **darker orange** a cell, the greater the statistically significant correlation with ballot rejection.
Lightest: p < 0.05; Midtone: p < 0.01; Darkest p < 0.001

	Any Reason		Signature Mismatch		Unsigned	
Variable	**Odds Ratio**	**Standard Error**	**Odds Ratio**	**Standard Error**	**Odds Ratio**	**Standard Error**
Uniformed and Overseas Citizens Absentee Voting Act (UOCAVA) status						
Eligible	1.264	.102	1.284	.118	.904	.176
Location (comparison = in-state)						
Out of state	.796	.070	.677	.072	1.250	.209
Overseas	.620	.082	.417	.073	1.657	.413
Gender (comparison = female)						
Male	1.365	.028	1.276	.030	1.740	.077
Other	*see note 1*	--	*see note 1*	--	*see note 1*	--
Unknown	1.045	.051	.998	.056	.995	.117
Race/Ethnicity (comparison = white)						
Black	1.987	.109	2.219	.134	1.156	.166
Hispanic	1.181	.046	1.199	.053	1.063	.092
Asian/Pacific Islander	1.111	.033	1.239	.041	.740	.054
Native American	1.823	1.950	2.292	2.482	*see note 2*	--
Multiple	*see note 3*	--	*see note 3*	--	*see note 3*	--
Unmatched	1.312	.088	1.362	.103	1.060	.162
Age (comparison = 18-21)						
22-25	.882	.032	.927	.038	.985	.087
26-29	.799	.030	.837	.035	.910	.081
30-44	.581	.018	.581	.020	.780	.058

Figure 3, *continued*

The **darker orange** a cell, the greater the statistically significant correlation with ballot rejection.
Lightest: p < 0.05; Midtone: p < 0.01; Darkest p < 0.001

	Any Reason		Signature Mismatch		Unsigned	
Variable	**Odds Ratio**	**Standard Error**	**Odds Ratio**	**Standard Error**	**Odds Ratio**	**Standard Error**
45-64	.472	.016	.424	.017	.846	.066
65+	.454	.022	.384	.023	.850	.083
Ballot language (comparison = English speaking/English ballot)						
Other language	1.465	.165	1.558	.196	1.248	.336
Other language, provided English ballot *see note 4*						
Name complexity						
Length	1.002	.004	1.006	.004	.994	.008
Space	.977	.044	.991	.050	.874	.091
Suffix	1.889	1.960	2.490	2.592	*see note 5*	--
Hyphen	1.054	.063	1.040	.070	1.038	.142
Apostrophe	1.123	.435	1.018	.465	1.741	1.236
Census tract demographics						
Median income	1.000	.000	1.000	.000	1.000	.000
High school	.268	.064	.221	.060	.882	.467
4-Year college	.504	.043	.418	.041	.718	.131
Voter history						
# of times voted	.761	.004	.756	.004	.787	.007
Rejected primary	2.691	.187	2.892	.221	.969	.230
Constant	***.128***	***.026***	***.109***	***.025***	***.008***	***.004***
Number of ballots	**1,229,937**		**1,230,644**		**1,230,589**	

Data notes: Late ballots were excluded. Unmatched ethnicity means the race/ethnicity for the surname could not be determined. Only a very small number of ballots were associated with a multiple race/ethnicity, and none of these ballots were rejected.

1. King County did not reject any ballots where the voter's gender was listed as "Other".
2. King County did not reject any ballots cast by Native Americans for lack of signature.
3. Only a very small number of ballots were associated with a multiple race/ethnicity, and King County did not reject any of these ballots.
4. Only a small number of ballots were associated with people speaking a language other than English, but who completed English ballots because ballots in their language were not available. None of these were rejected.
5. King County did not reject any ballots for lack of signature for voters with a suffix in the name on their voter registrations.

Although several of the voter characteristics related to ballot rejection were statistically significant, not all of the variation in ballot rejection rates was determined

We performed two tests to determine whether the variables we used in our regression models help explain the variation in rejection rates amongst demographic groups. As **Figure 4** shows, Wald's Chi-Square, a standard test to determine if explanatory variables in a model are statistically significant, indicated that they were statistically significant. This means that the variables we included in our models predict whether or not a ballot will be rejected significantly better than chance.

Figure 4 – Model fit statistics

Outcome (all counties)	Wald's X2	Pseudo R2	Outcome (King Co. only)	Wald's X2	Pseudo R2
Any reason	24286.24 (p <0.0000)	0.1255	Any reason	6672.88 (p<0.0000)	0.1194
Signature mismatch	23332.78 (p <0.0000)	0.1378	Signature mismatch	5731.74 (p<0.0000)	0.1221
Unsigned	3747.17 (p <0.0000)	0.0812	Unsigned	1208.83 (p<0.0000)	0.0746

Note: Late ballots were excluded.

R^2 statistics are used in linear regression models to help determine whether all variables that affect an outcome are included in a model. The Pseudo R^2 statistic used in logistic regression cannot be interpreted the same as the R^2 statistic used in linear regression, however, it should be noted that all of the R^2 statistics were in the low range (shown in Figure 4). The low value for the Pseudo R^2 statistic indicates that there is more that influences whether or not a voter's ballot is rejected than the variables considered by auditors.

Appendix D: Leading practices to help reduce ballot rejection rates

Counties used the leading practices in this appendix fully, partially or not at all, as indicated in the key at right.

Key to all tables

● = Used by county

◖ = Used partially

○ = County did not use

Leading practices for signature verification and curing

Practice	Counties with higher rejection rates					Counties with lower rejection rates				
	Adams	Benton	King	Kittitas	Whit-man	Asotin	Cowlitz	Klickitat	Mason	San Juan
Collect a few samples of voters' signatures during voter registration and on cure letters	○	○	○	○	○	○	○	○	○	○
Use experienced signature reviewers	●	●	●	●	●	●	●	●	●	●
At least two reviewers before a signature is challenged	●	●	●	●	●	●	●	●	●	●
Contact voters within a day of their ballot challenge using a more immediate method beyond the cure letter (email or text)	○	◖	●	○	○	◖	○	○	○	●
Contact challenged voters more than once, beyond statutory requirements	●	○	●	◖	●	◖	●	○	●	●
Contact challenged voters by multiple methods, beyond statutory requirements	●	○	●	◖	●	◖	●	○	●	●
Update phone numbers and email addresses from ballot return envelopes	◖	○	◖	○	◖	○	●	○	●	●
Notify voters if their ballots were rejected and for what reason after elections	○	●	◖	○	●	◖	◖	○	○	○
Send signature update letters after elections	◖	◖	○	◖	●	●	●	◖	○	●
Include prepaid postage envelopes with cure letters	●	●	●	○	●	●	●	●	●	●
Send cure letters in the voter's preferred language	●	○	●	○	○	○	○	○	○	○

Leading practices for voter education and outreach: Election websites include key dates and deadlines

Practice	Counties with higher rejection rates					Counties with lower rejection rates				
	Adams	Benton	King	Kittitas	Whitman	Asotin	Cowlitz	Klickitat	Mason	San Juan
When drop boxes open	○	●	●	●	●	○	●	●	●	○
Date and time to return a ballot at a drop box	○	●	●	●	●	○	●	○	●	●
Suggested deadline to have ballot picked up from mailbox and have it postmarked on time	○	●	●	●	○	○	●	○	●	●
When to return a cure letter	○	○	●	○	○	○	○	○	●	○

Leading practices for voter education and outreach: Election websites include key information

Practice	Counties with higher rejection rates					Counties with lower rejection rates				
	Adams	Benton	King	Kittitas	Whitman	Asotin	Cowlitz	Klickitat	Mason	San Juan
Drop box locations and addresses	○	●	●	●	●	◖	●	●	●	●
Hours of operation for drop box and voting centers	○	●	●	◖	●	◖	●	○	●	○
Listing all the methods to return a ballot	○	●	●	○	●	○	●	○	●	●
Information around why ballots may be challenged and how voters can cure their ballots	○	○	●	○	○	●	●	○	●	○

Leading practices for voter education and outreach: Additional tactics

Practice	Counties with higher rejection rates					Counties with lower rejection rates				
	Adams	Benton	King	Kittitas	Whit-man	Asotin	Cowlitz	Klickitat	Mason	San Juan
Developing outreach plans, such as planned events	◖	◖	●	◖	○	○	◖	◖	○	◖
Partner with local organizations to conduct education and outreach	◖	◖	●	◖	◖	○	●	◖	◖	◖
Using variety of activities and media to reach voters such as social media, TV, radio, and mailers	●	●	●	●	●	●	●	●	●	●
Providing education and outreach targeted at specific populations--specifically underrepresented and/or groups with higher-than-average rejection rates	○	○	●	◖	◖	◖	○	◖	○	◖
Providing education specifically around vote-by-mail deadlines and signature verification requirements	◖	●	●	●	◖	●	●	●	●	●

Leading practices for ballot and envelope design and information provided

Practice	Counties with higher rejection rates					Counties with lower rejection rates				
	Adams	Benton	King	Kittitas	Whit-man	Asotin	Cowlitz	Klickitat	Mason	San Juan
Return envelope states that signatures are going to be compared to signatures on file	◖	○	◖	○	○	○	○	○	○	○
Provides consistent design elements as well as large signature blocks	●	●	●	●	●	●	●	●	●	●
Uses plain talk and active voice	●	●	●	●	●	●	●	●	●	●

Leading practices for using data to improve remedy and outreach practices

Practice	Counties with higher rejection rates					Counties with lower rejection rates				
	Adams	Benton	King	Kittitas	Whit-man	Asotin	Cowlitz	Klickitat	Mason	San Juan
Evaluating data to track costs and remedy rates associated with different practices & monitor their success	○	○	●	○	○	○	○	○	○	○
Using data to inform outreach efforts that consider differences in rejection reasons in groups such as by age and language preferences	○	○	●	○	○	○	○	○	○	○

Leading practices to consider when choosing the locations of drop boxes: Accessibility and convenience to drop box

Practice	Counties with higher rejection rates					Counties with lower rejection rates				
	Adams	Benton	King	Kittitas	Whitman	Asotin	Cowlitz	Klickitat	Mason	San Juan
Within 15-minute drive	●	●	●	●	◖	●	●	●	◖	◖
Availability for isolated communities	●	●	●	●	●	●	●	●	●	●
Access to public transit	N/A	●	●	◖	●	●	●	N/A	●	◖
Visibility of drop box	●	●	●	●	●	●	●	●	●	●
Ability to drive up to box	●	●	◖	◖	●	●	●	●	◖	◖
Parking availability	●	●	●	●	●	●	●	●	●	●
ADA Accessibility	●	●	●	●	●	●	●	●	●	●

Leading practices to consider when choosing the locations of drop boxes: Equity considerations

Practice	Counties with higher rejection rates					Counties with lower rejection rates				
	Adams	Benton	King	Kittitas	Whitman	Asotin	Cowlitz	Klickitat	Mason	San Juan
Voter distance from box for racial or ethnic group, income, age and education	●	●	●	●	◖	●	●	●	◖	◖

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