

# Colorado Secretary of State's Office

BEAC Presentation – 2018 Post-Election  
December 19, 2018

# 2018 Security Improvements

# Elections Systems Security

## Security of All Elections Systems

- **For that reason, the Secretary of State's office encouraged all county elections and IT departments to participate in the following information-sharing communities:**
  - Colorado Threat Information Sharing network (CTIS)
  - Colorado Information & Analysis Center (CIAC)
  - Multi-State Information & Analysis Center (MS-ISAC)
  - Elections Infrastructure Information & Analysis Center (EI-ISAC)

# Elections Systems Security (continued)

## Security of Voter Registration System

**SCORE and WebSCORE operated without interruption on Election Day in 2018. Why?**

- Third-party penetration testing and vulnerability assessments (since 2008)
- Mandatory cybersecurity training for all users (since 2013)
- Two-factor authentication (2FA) (since 2013)
- Network and database performance monitoring tools (since 2015)
- Election Rules requiring counties to install endpoint malware protection and report cybersecurity incidents (since 2016)
- DHS risk and vulnerability assessments (2017-2018)
- DHS Hunt and Incident Response Team (HIRT) forensic search for past penetrations and any lurking malware (2018)
- Redundant deployment of Cloudflare and Google Shield for distributed denial-of-service (DDoS) attack protection (2018)

# Elections Systems Security (continued)

## **Security of Vote Tabulation Systems**

- In 2018, Colorado became the first state in US to require voting system vendors to provide programming services using only hardware & software certified in CO as verified through SOS trusted build process, comply with new removable media rules, and deliver the programming to counties physically rather than by any method exposed to the internet (new Election Rule 20.7)

# Elections Systems Security (continued)

## **Security of Vote Tabulation Systems (continued)**

### **Risk-limiting Audits (RLAs)**

- In 2017, Colorado became first state to conduct statewide RLA
  - SOS formed RLA Representative Group consisting of county election officials and nationally recognized RLA subject matter experts
  - SOS engaged Free & Fair to develop open source RLA software, which has since been improved and enhanced by Democracy Works
- CO counties have now successfully conducted 3 statewide RLAs

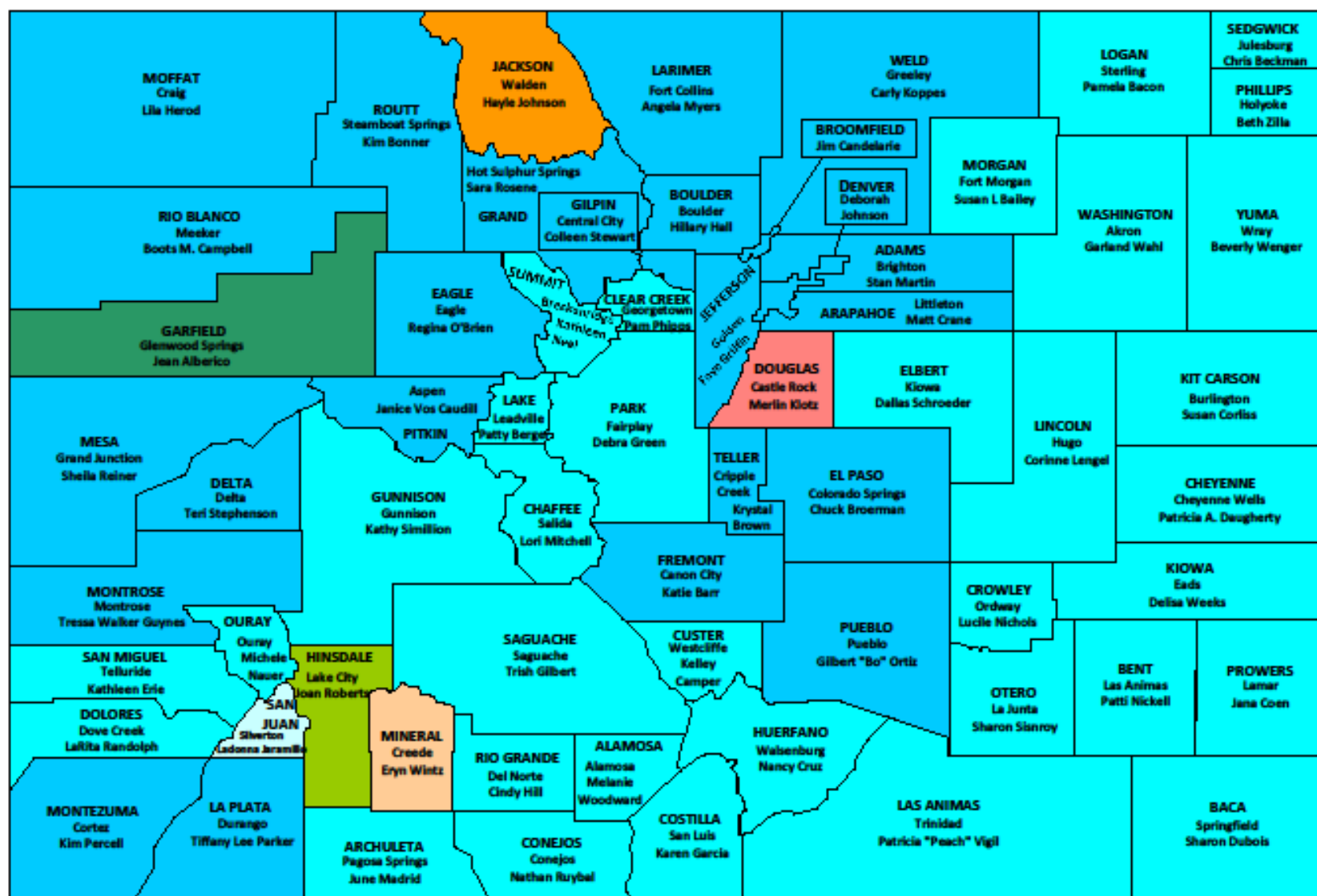
# Elections Systems Security (continued)

## **Security of Vote Tabulation Systems (continued)**

### **Risk-limiting audits (RLAs) (continued)**

- RLAs offer high statistical probability of discovering and correcting a “wrong” election outcome (if one exists) before official results are certified, they represent an extremely important advance and robust additional layer of elections security
- No other state in US currently has this ultimate “fail safe” protection

# Voting System Vendors and Equipment in Colorado - 2018



|   |  |  |  |                                |  |
|---|--|--|--|--------------------------------|--|
| Dominion Standard (ICX/ICC) (24)          |  | Dominion Express (ICX/ICC) (34)          |  | Dominion Mini (ICX) (1)        |  |
| Clear Ballot (ClearAccess/ClearCount) (1) |  | Hart (eSlate / eScan) (1)                |  | Hart (eSlate) / Hand Count (1) |  |
| Hart (eSlate / eScan / Ballot Now) (1)    |  | Premier (AccuVote-TSX / AccuVote-VX) (1) |  |                                |  |



# The Cybersecurity 202: How Colorado became the safest state to cast a vote



By Derek Hawkins  
May 10

## THE KEY



A voter exits a voting booth in a polling station in Missoula, Mont. (Justin Sullivan/Getty Images)

As local officials across the country scramble to hack-proof their voting systems ahead of the midterm elections, there's one state that is paving the way as a leader in election security.

Colorado has done virtually everything election experts recommend states do to stave off a repeat of 2016, when Russian hackers targeted [21 states](#) as part of the Russian government's massive election interference campaign.

The state records every vote on a paper ballot. It conducts rigorous post-election audits [favored by voting researchers](#). Nearly every county is equipped with up-to-date voting machines. Election officials take part in security trainings and IT workers test computer networks for weaknesses.

Secretary of State Wayne Williams told me the state benefited from having some of those measures in place before 2016. Once the extent of Russia's digital campaign in the presidential election became clear, he made it a priority to invest more in them, he said.

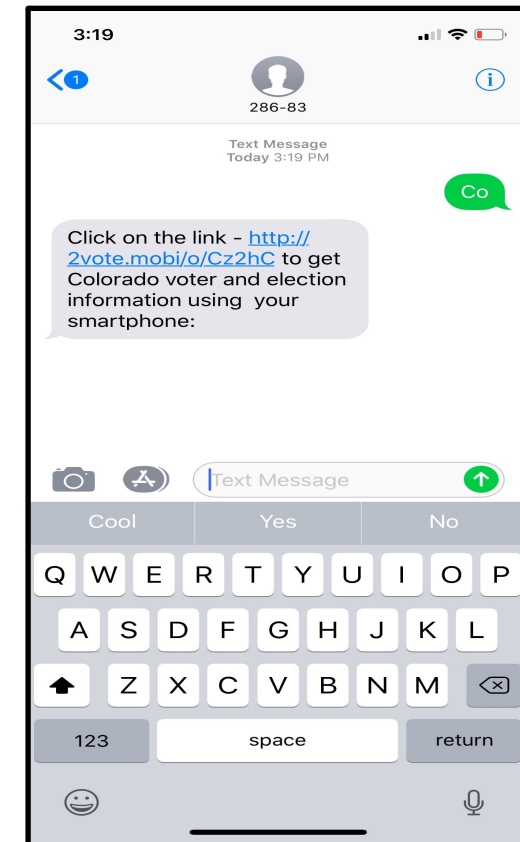


## Most Read Politics

- Analysis**  
Fact-checking President Trump's interview with The Washington Post
- Analysis**  
President Trump's full Washington Post interview transcript, annotated
- Condi provided early alert to Stone about WikiLeaks release, according to draft special counsel document
- Trump slams Fed chair, questions climate change and threatens to cancel Putin meeting in wide-ranging interview with The Post
- Trump on climate change: 'People like myself, we have very high levels of intelligence but we're not necessarily such believers.'

# Help Keep Colorado Elections Safe Campaign

- In October, we began an ad campaign encouraging Coloradans to report any security issues that they saw to our office.
- Advertised using banner ads online and the existing text-2vote platform.



# Help Keep Colorado Elections Safe Campaign

[Home](#) [Bingo](#) [Business](#) [Charities](#) [Elections](#) [Notary](#) [full menu](#)

Menu



IS THE SAFEST  
STATE TO  
CAST A VOTE.



LET'S KEEP IT  
THAT WAY.

## Help Keep Colorado Elections Safe

[Versión en Español](#)

[Share](#) [Tweet](#)

### What are we doing right now to keep our elections safe?

County clerks around the state, along with the Colorado Secretary of State's office, have been at work for years to make sure our elections are secure and your ballot counts. That's why Colorado was recently named [the safest state to cast a vote](#). Some of the steps we have taken to make sure your ballot is safe include:

1. Conducting post-election, risk limiting audits.
  - Colorado is the first state to conduct this type of post-election audit on our election results. This approach is preferred by election security experts and helps to ensure that your ballot was counted correctly. [Watch a video about Colorado's use of risk limiting audits.](#)
2. Keeping a paper record of every vote.
  - Every vote cast in Colorado has a paper record associated with it. Because we have a paper record, Colorado can conduct rigorous post-election audits, and can back up every counted vote with a piece of paper that can't be altered by cybersecurity threats.
3. Purchasing up-to-date equipment, and regularly training for cybersecurity threats.
  - To keep Colorado protected from cybersecurity threats, nearly every county across the state has adopted new voting equipment. This new equipment is better able to protect against threats from domestic and foreign hackers. Colorado election officials also regularly train for cybersecurity threats, including a [recently conducted state-wide exercise](#) attended by county clerks, Colorado Secretary of State's office, and officials from the Department of Homeland Security.

To find out more about what we are doing to keep our elections safe, visit our [Elections Security page](#).

### What can you do to help keep our elections safe?

If you see something that you believe is a threat to elections security, you should take the following steps:

1. If this is an emergency and you or someone else is in danger, call 911.
2. If you see activity that you think is suspicious at a polling location, first alert on-site election officials about your concern. They may be able to help resolve the issue right away.
3. If you are still concerned about what you see, then please report the issue by clicking the button below. The issue will be sent to your county and the Colorado Secretary of State, who will follow-up on your concerns.

[Report a voting issue](#)

# Help Keep Colorado Elections Safe Campaign

## Report a Voting Issue

Who are you? / ¿Quién es usted?

\*Name / Nombre

\*Address / Dirección

\*City / Ciudad

\*ZIP code / Código postal

\*You must enter either a phone number or email. / Debe introducir un número de teléfono o correo electrónico.

Phone / Número de teléfono

Email / Dirección de correo electrónico

What did you see? / ¿Qué vio?

\*Describe what you saw / Describe lo que vio  
(0 of 500 characters max / caracteres máximo)

☐ I have pictures, videos or other materials that I can provide. / Tengo fotos, videos u otros materiales que puedo proporcionar.

Where did you see this happen? / ¿Dónde vio esto suceder?

\*County / Condado

Choose one / Elije uno

\*Location / Ubicación

(0 of 250 characters max / caracteres máximo)

Do you want us to contact you? / ¿Quiere que lo contactemos?

☐ Yes / Si

☐ I'm willing to be contacted if necessary, but I don't need a reply. / Estoy dispuesto a ser contactado si es necesario, pero no necesito una respuesta

☐ No

Submit  
Someter

Cancel  
Cancelar

2018 EPIC TTX

**VICE** News Tonight | HBO



## Voting Blogs: Creating a culture of proactive security: Colorado's EPIC TTX prepares for almost any scenario | electionlineWeekly

Sep 14 2018 » The Voting News



There was a fire, a tornado, and the heating system went down in the ballot-tabulation room. There was fake news on social media and real news media in the room. Polls opened late and stayed open late. The state voter registration database went down. Tabulation machines failed to tabulate. There were concerned citizens and advocates demanding to know what was happening. And then there was Olga from Sputnik News who seemed overly curious about everything. Those were just some of the scenarios and situations faced by Colorado county elections officials and staff participating in the secretary of state's EPIC table top exercise last week in Englewood.

The day-long EPIC TTX was based on a similar tabletop training exercise conducted by the Belfer Center in March of this year with 38 state elections officials and was designed to help prepare county elections

officials and their staff for any and every possibility.

And based on reactions from county clerks in attendance, the effort of the secretary of state's office was well worth it and many county clerk left Englewood vowing to put what they had learned into action immediately.

"I immediately met with my county administrator to discuss cyber security within my office and throughout our county offices, for both right now and what it could look like in the future," said Eryn Wintz, [Mineral County](#) clerk and recorder. "I also had a very honest discussion about my security and contingency plan that included actual practices and how to protect myself and by reflection the state by not being the "weakest link" because of limitations set by logistics or financial restraints."

# 2018 General Election

Turnout



# Colorado's 2018 Registration Totals by Party

|                                    | ACN    | APV | DEM       | GRN    | LBR    | REP       | UAF       | UNI   | Grand Total |
|------------------------------------|--------|-----|-----------|--------|--------|-----------|-----------|-------|-------------|
| TOTAL ACTIVE ELECTORS              | 10,545 | 234 | 1,049,381 | 9,989  | 40,546 | 1,002,995 | 1,295,725 | 1,441 | 3,410,856   |
| TOTAL ELECTORS (Active + Inactive) | 12,542 | 234 | 1,189,166 | 12,424 | 47,493 | 1,138,236 | 1,544,744 | 1,636 | 3,946,475   |

# Colorado's Registration

ELECTION YEARS ?



SELECT INDICATOR

Data Completeness

Disability- or illness-related  
Voting Problems

Mail Ballots Rejected

Mail Ballots Unreturned

Military and Overseas Ballots  
Rejected

Military and Overseas Ballots  
Unreturned

Online Registration Available

Postelection Audit Required

Provisional Ballots Cast

Provisional Ballots Rejected

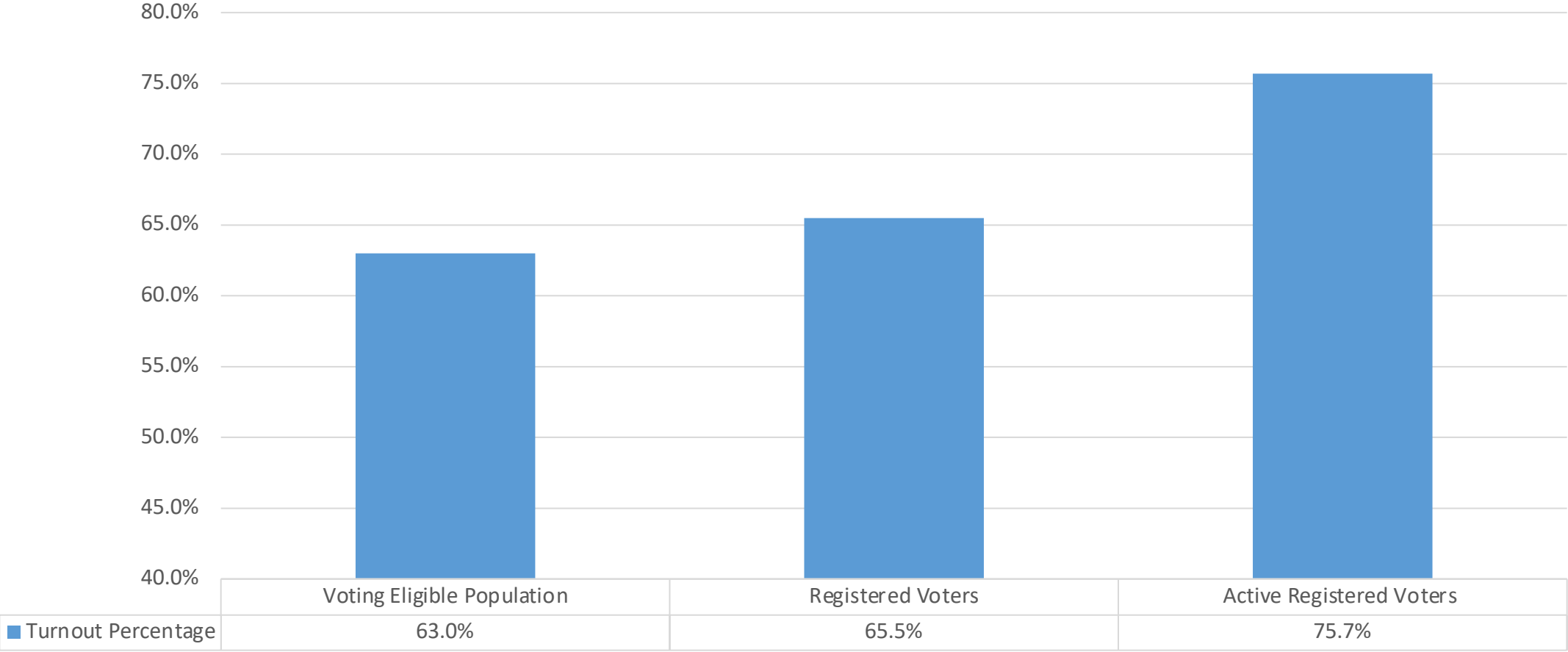


The voter registration rate is the percentage of eligible citizens who report being registered in a state.

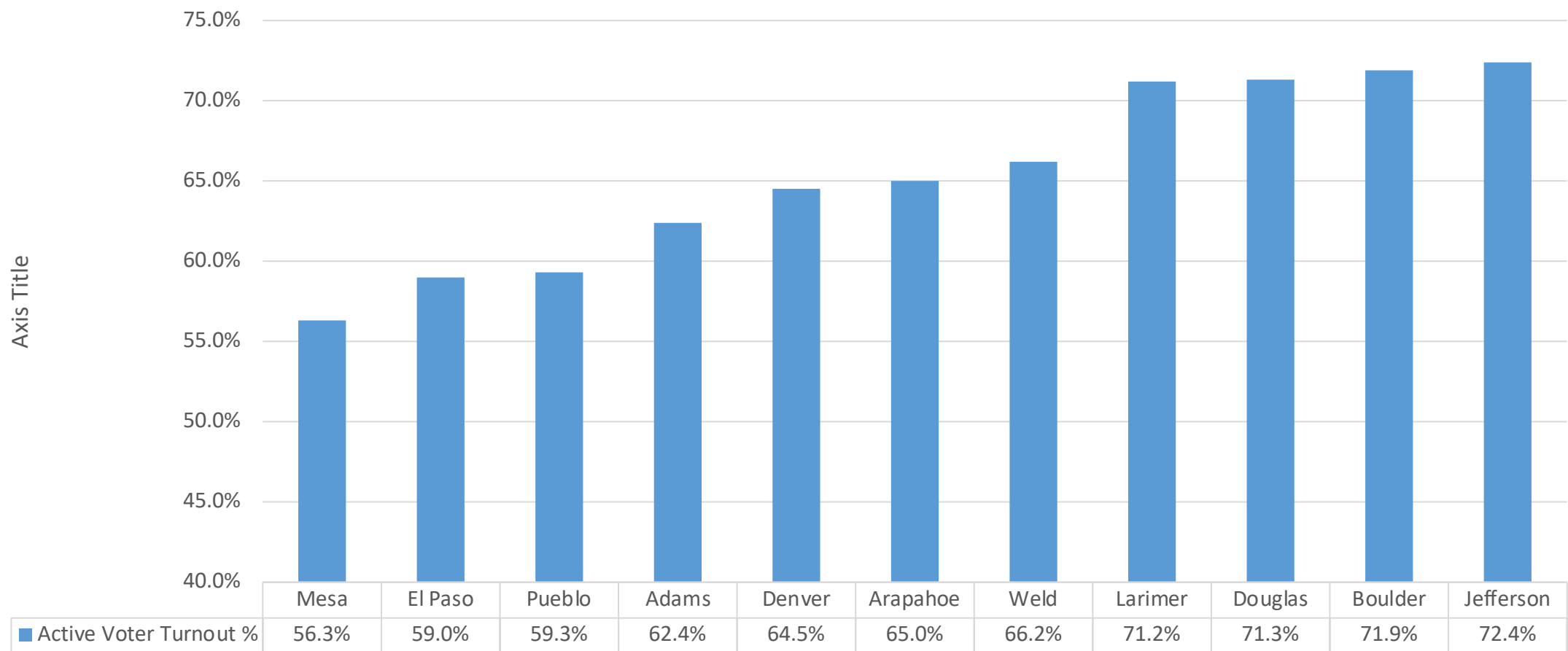
Voter registration rate is a summary measure of the extent to which eligible adult citizens indicate they

Registration rates calculated using the Census Bureau's biennial Voting and Registration Supplement are more stable over time than are those using official state statistics because states

# Colorado's 2018 General Election Turnout by Categories of Voters

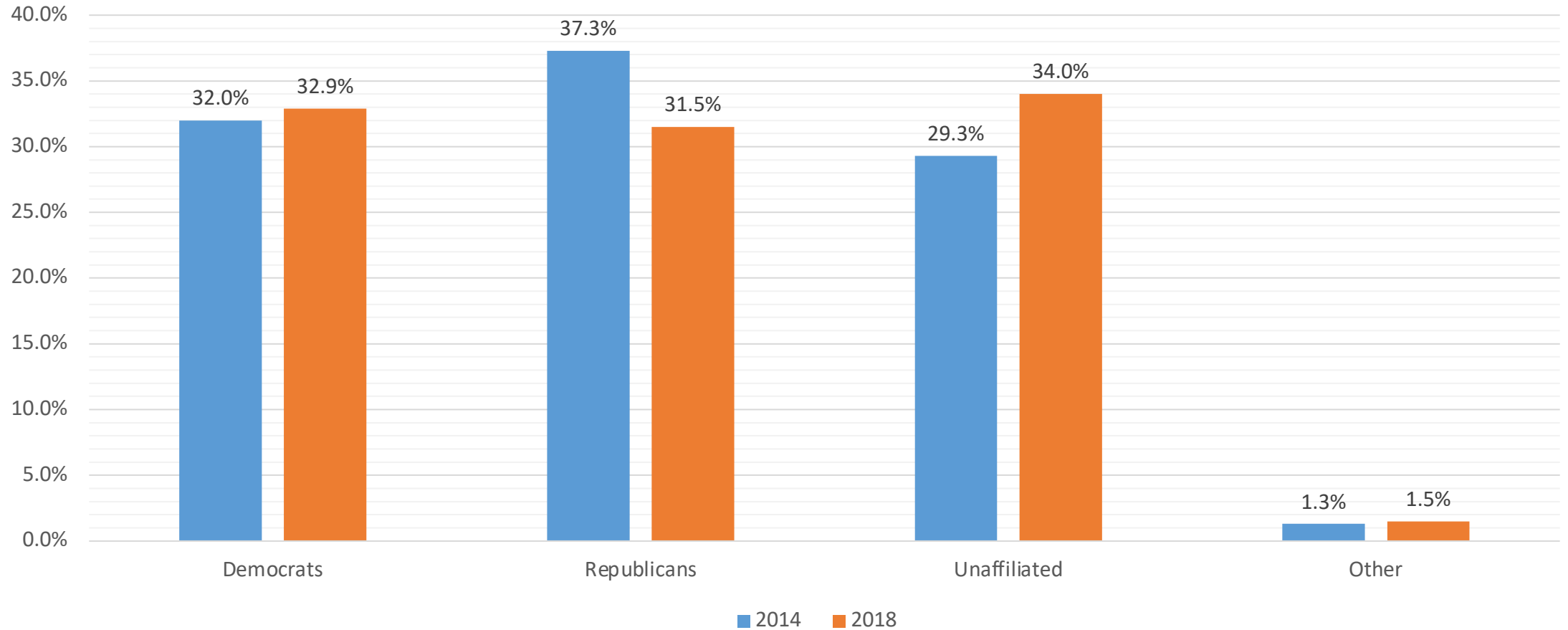


# Active Voter Turnout in Colorado's Most Populous 11 Counties



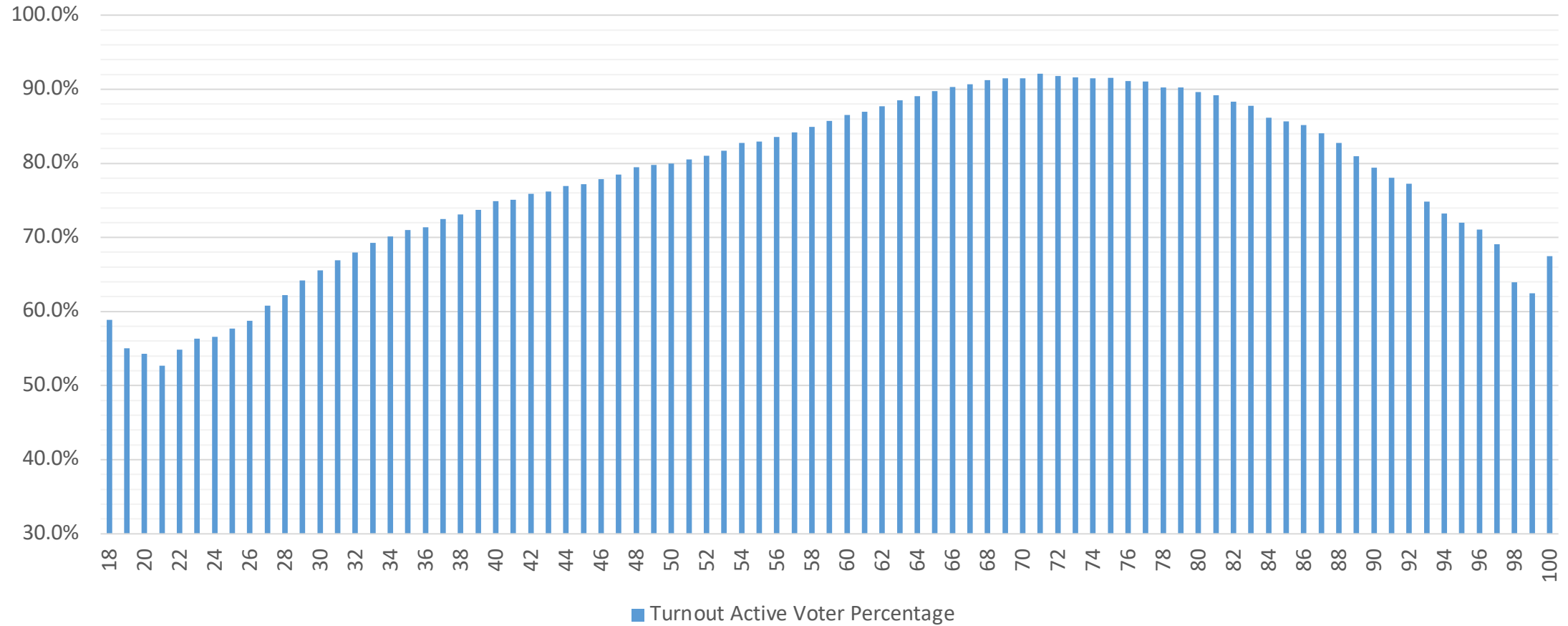
# Percentage of the Vote by Party

## 2014 v. 2018



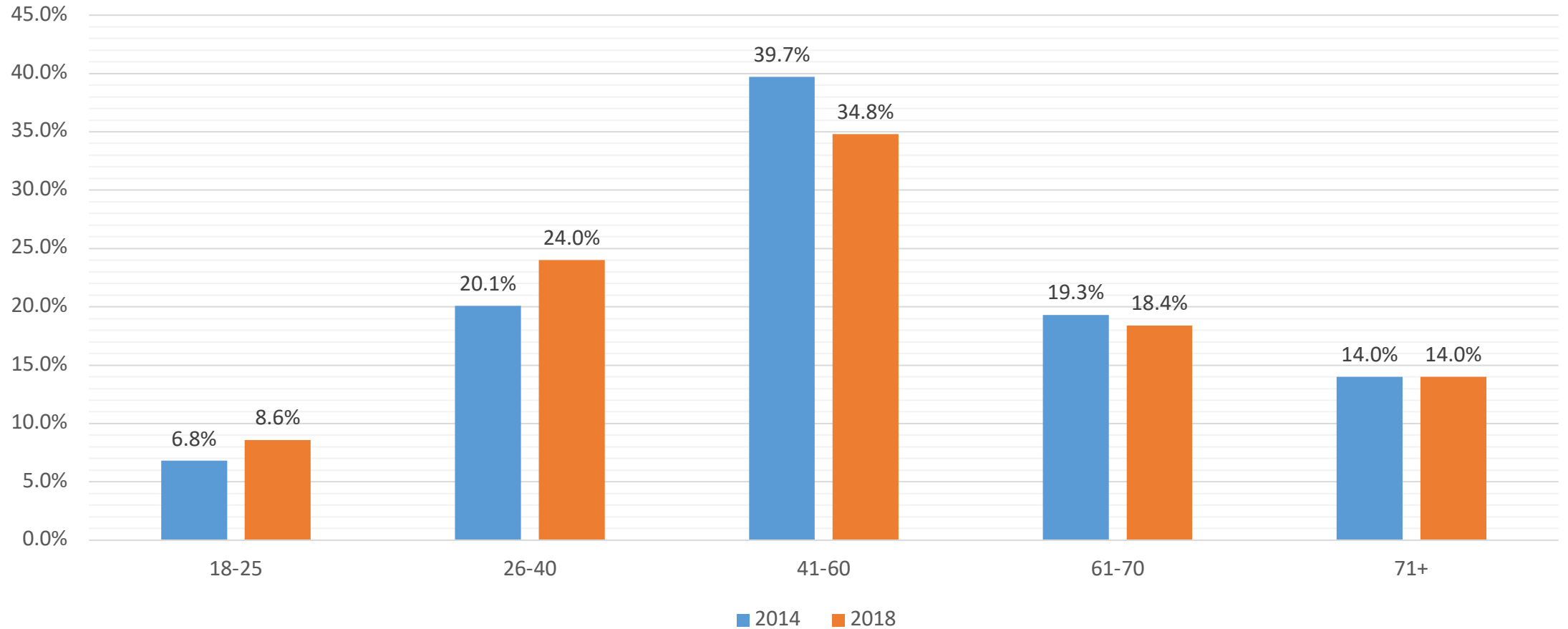
# 2018 General Election

## Active Voter Turnout by Age



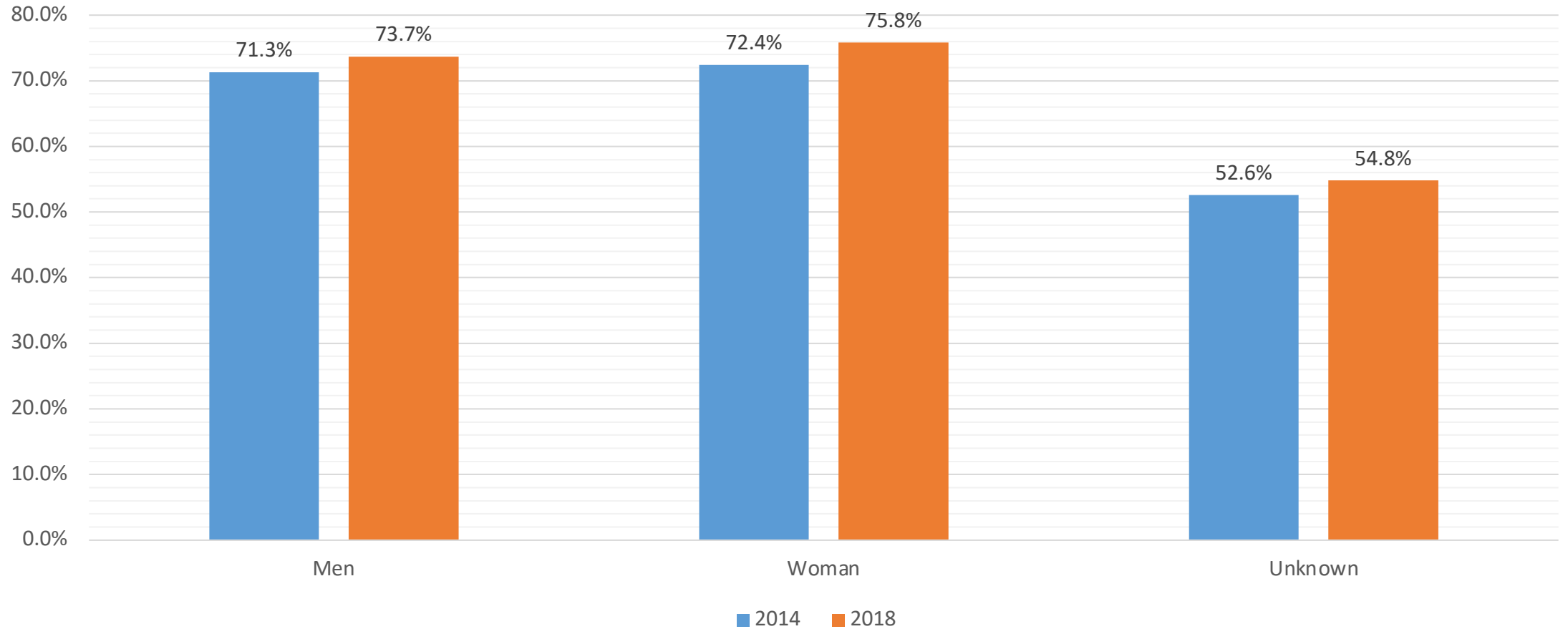
# Percentage of the Vote by Age Category

## 2014 v. 2018



# Active Voter Turnout by Sex

## 2014 v. 2018

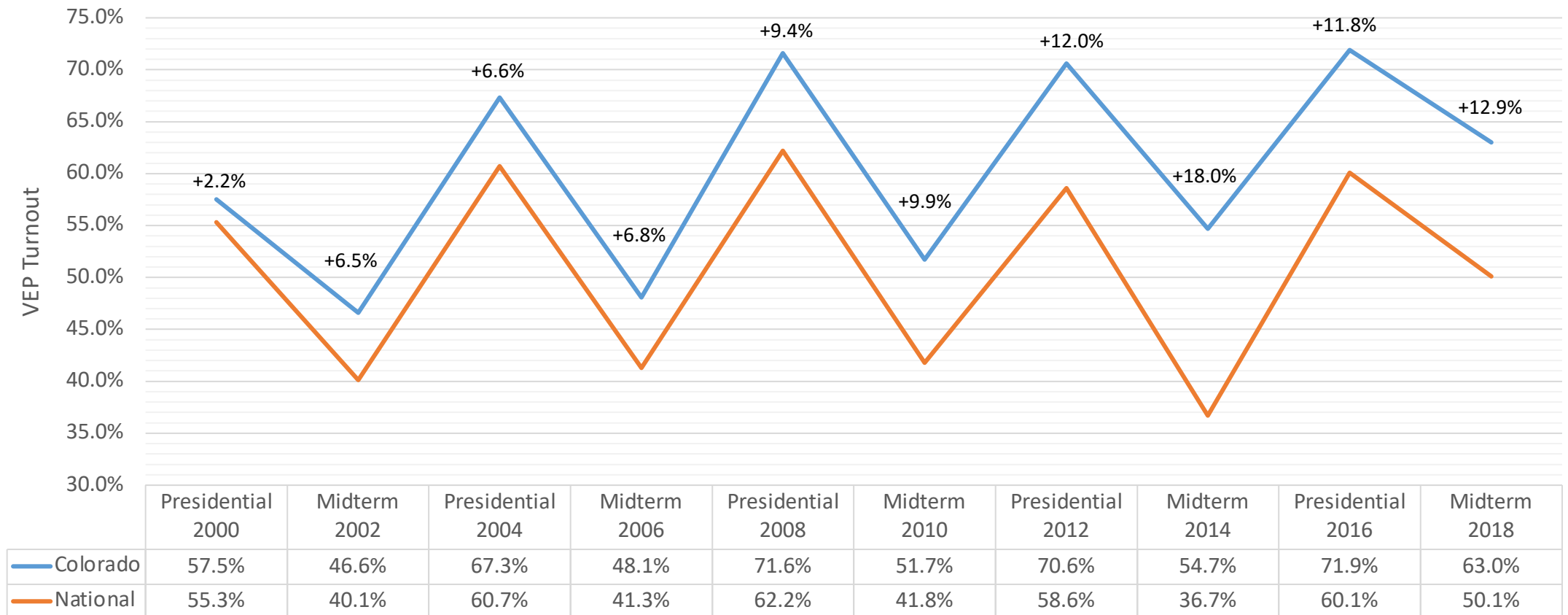




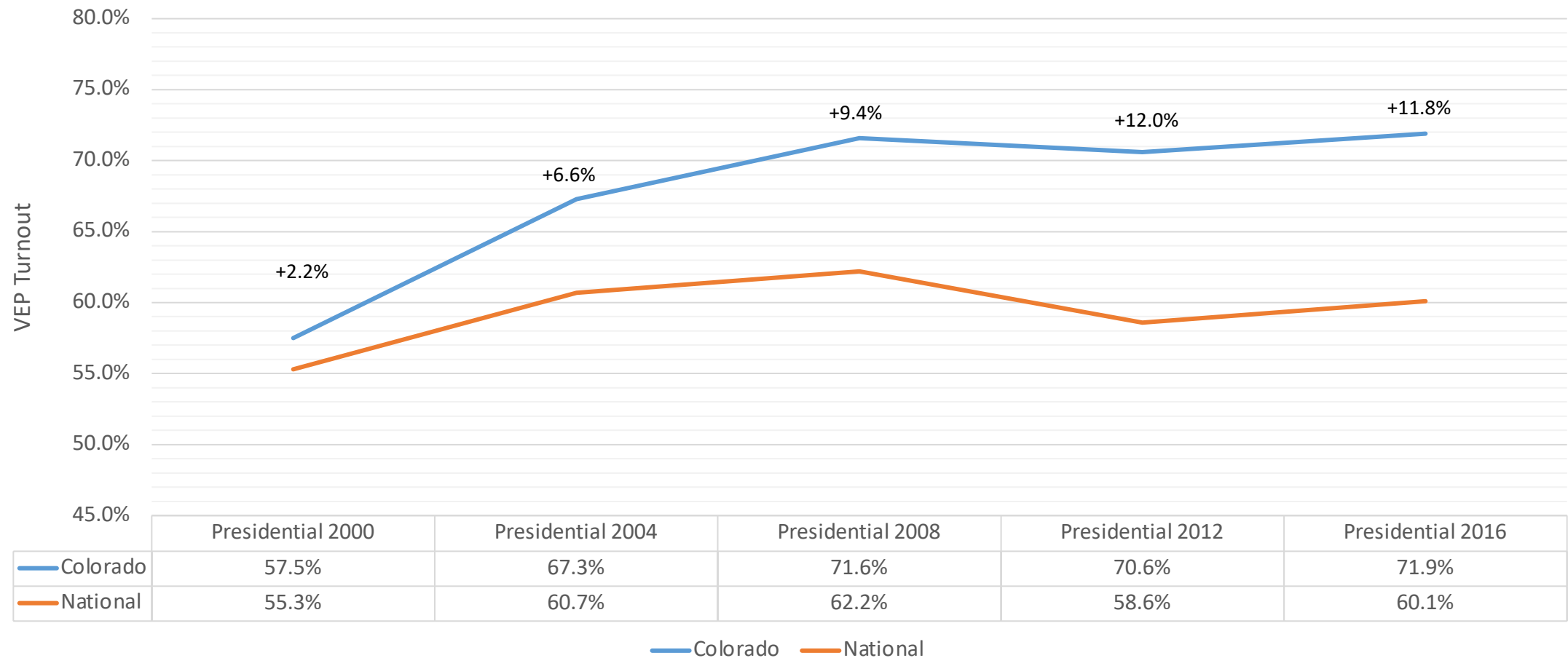
# Colorado's Turnout Compared to the Nation and other States

# Colorado v. National Turnout

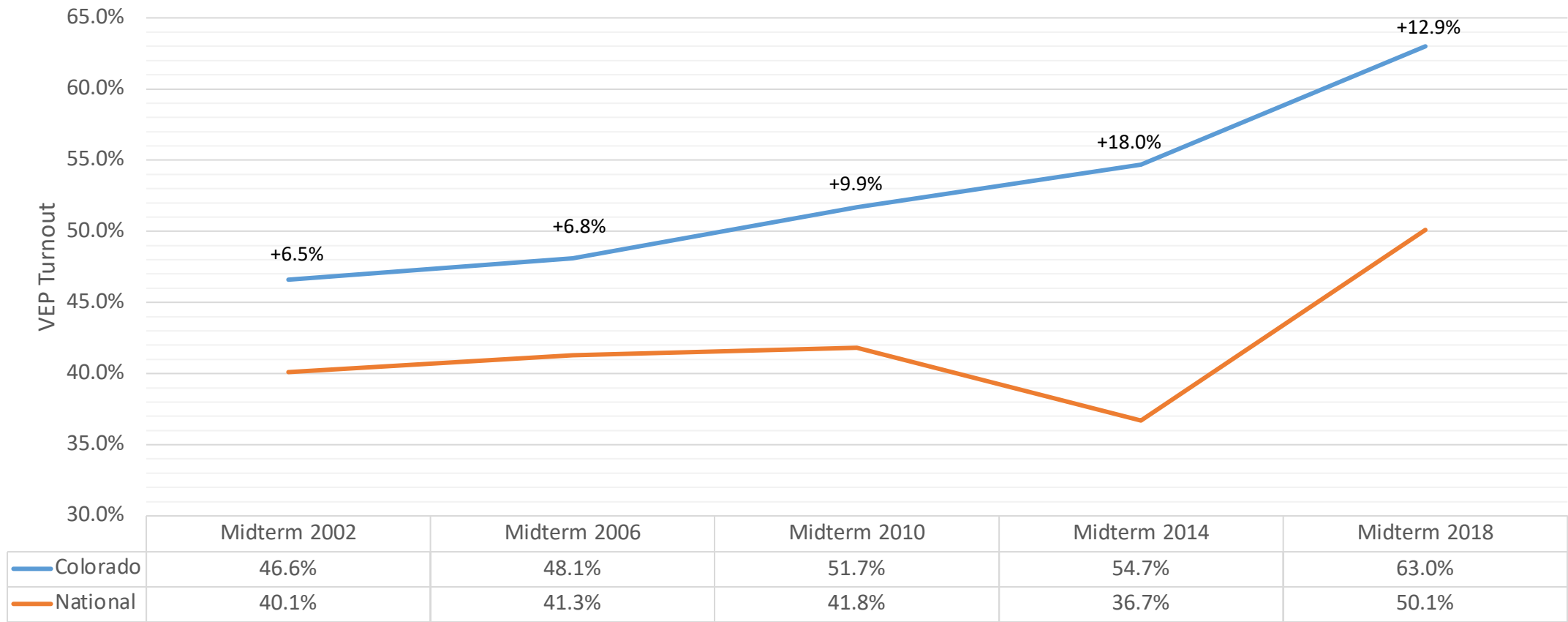
## 2000-2018



# Colorado's v. National Turnout During Presidential Elections 2000-2016

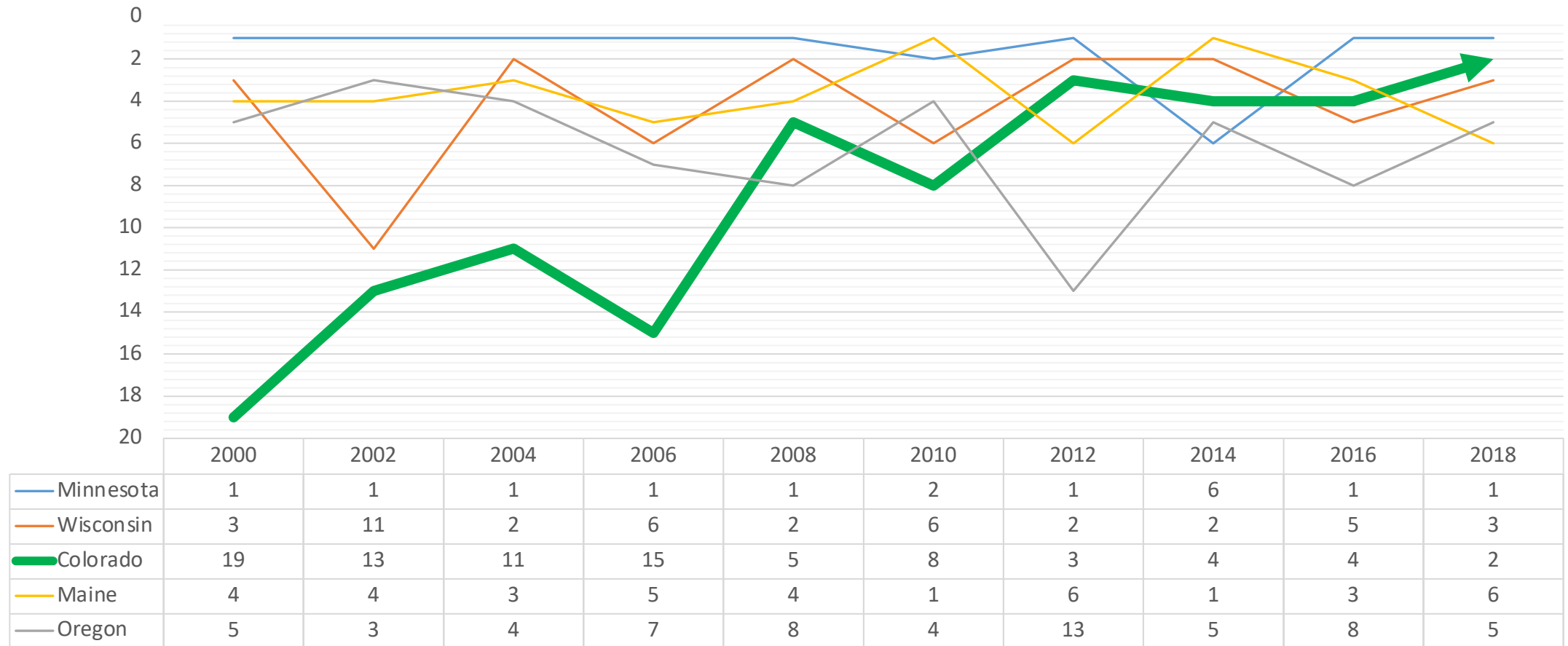


# Colorado's v. National Turnout During Midterm Elections 2000-2018



# Top States VEP Turnout

## 2000-2018



# Election Assistance Commission

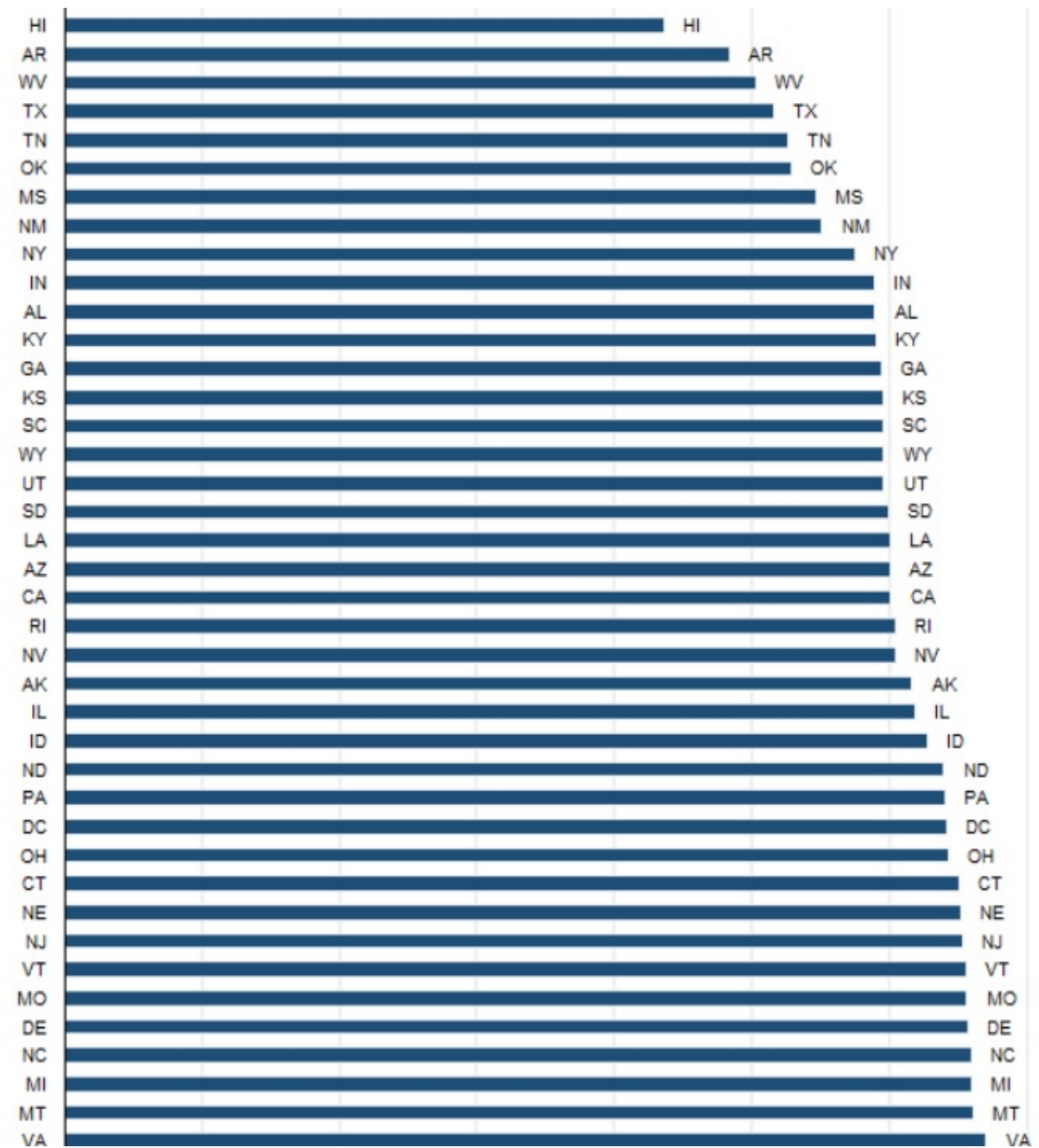
## Overall Turnout in 2016

- When assessing election administration, one primary outcome of interest is turnout. In this report, two different approaches are used to measure voter turnout. The first method is to compare the number of Americans who voted as a percentage of the civilian voting age population (CVAP). According to the EAVS, 140,114,502 Americans voted in the 2016 General Election. This number represents 63 percent of the CVAP nationally. The data in Figure 2 show that approximately half of all states had turnout rates between 60 and 70 percent of CVAP.
- Five states—Oregon, Maine, New Hampshire, Minnesota, and Colorado—had CVAP turnout rates of more than 70 percent.
- [https://www.eac.gov/assets/1/6/2016\\_EAVS\\_Comprehensive\\_Report.pdf](https://www.eac.gov/assets/1/6/2016_EAVS_Comprehensive_Report.pdf)

# 2016 Turnout as a Percentage of CVAP

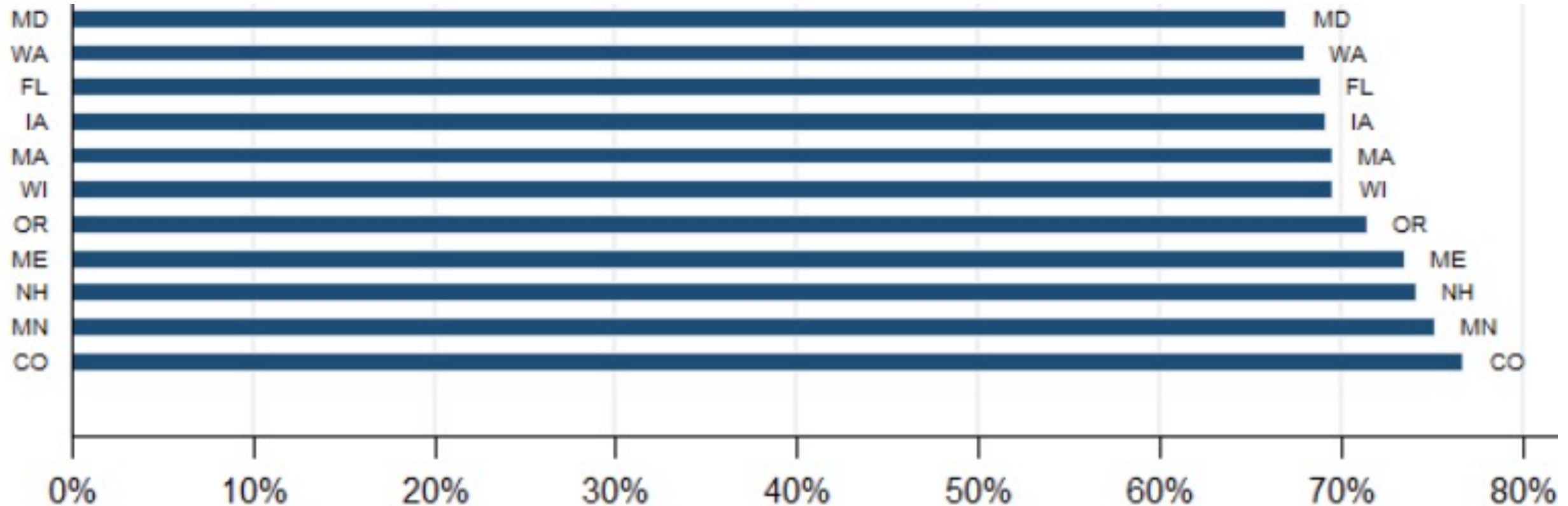
The Bottom 40

(Two below 50%: HI and AR)



# EAC: 2016 Turnout as a Percentage of CVAP

The Top 11 (Five above 70%: OR, ME, NH, MN, and CO)



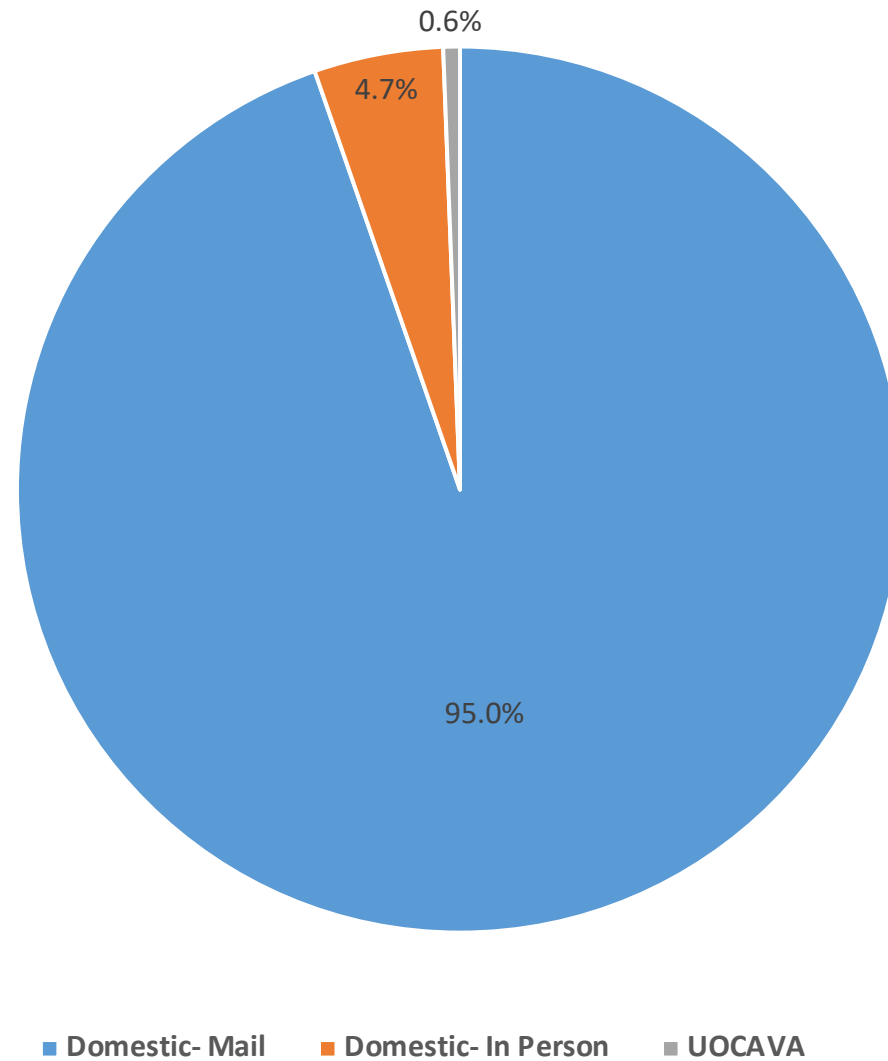


# 2018 General Election

## Voting Methods

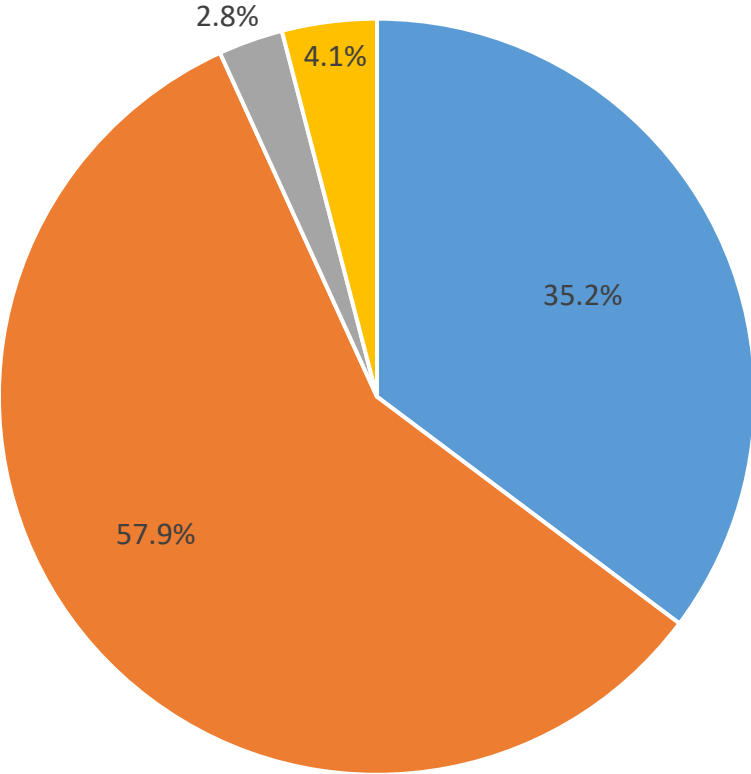
# 2018 General Election

## Vote Method – Mail v. In=Person



# 2018 General Election

## UOCAVA Return Method

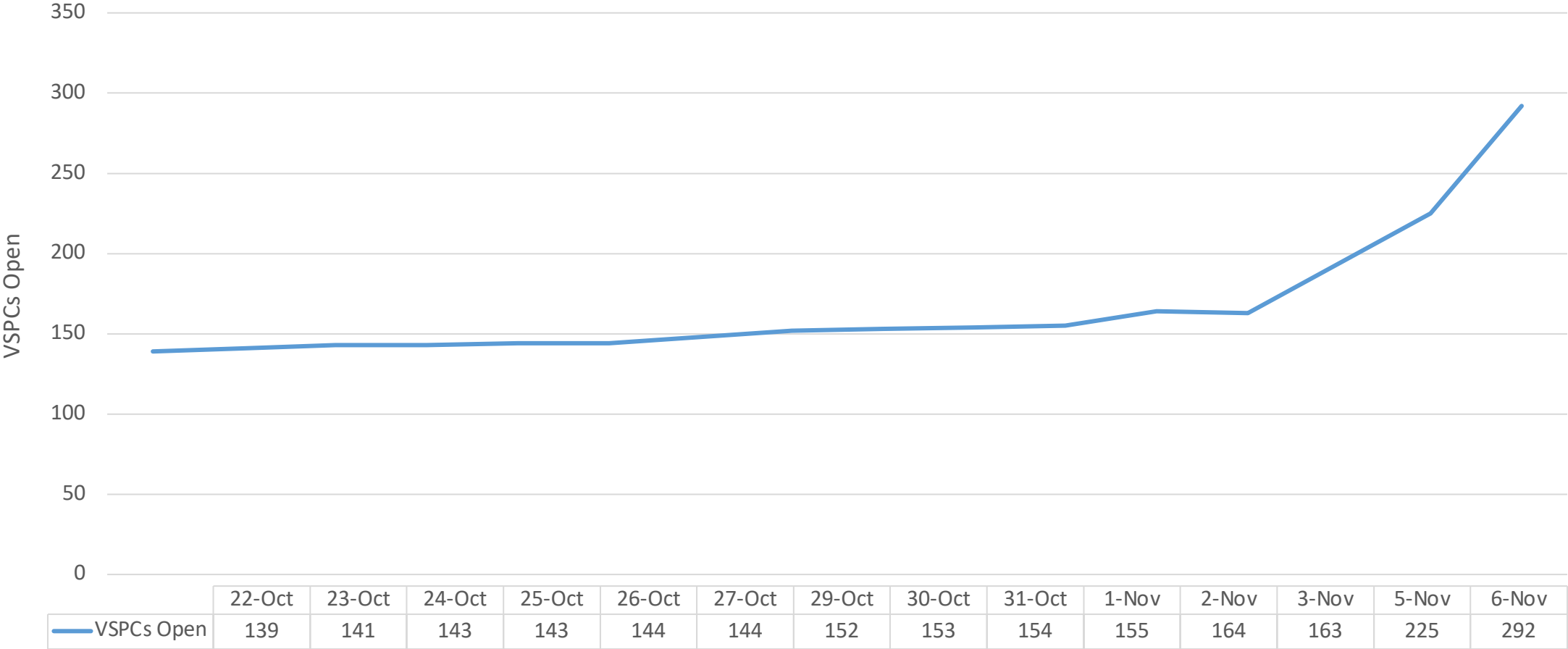


■ UOCAVA- Mail   ■ UOCAVA- SBR   ■ UOCAVA- Email   ■ UOCAVA- Other

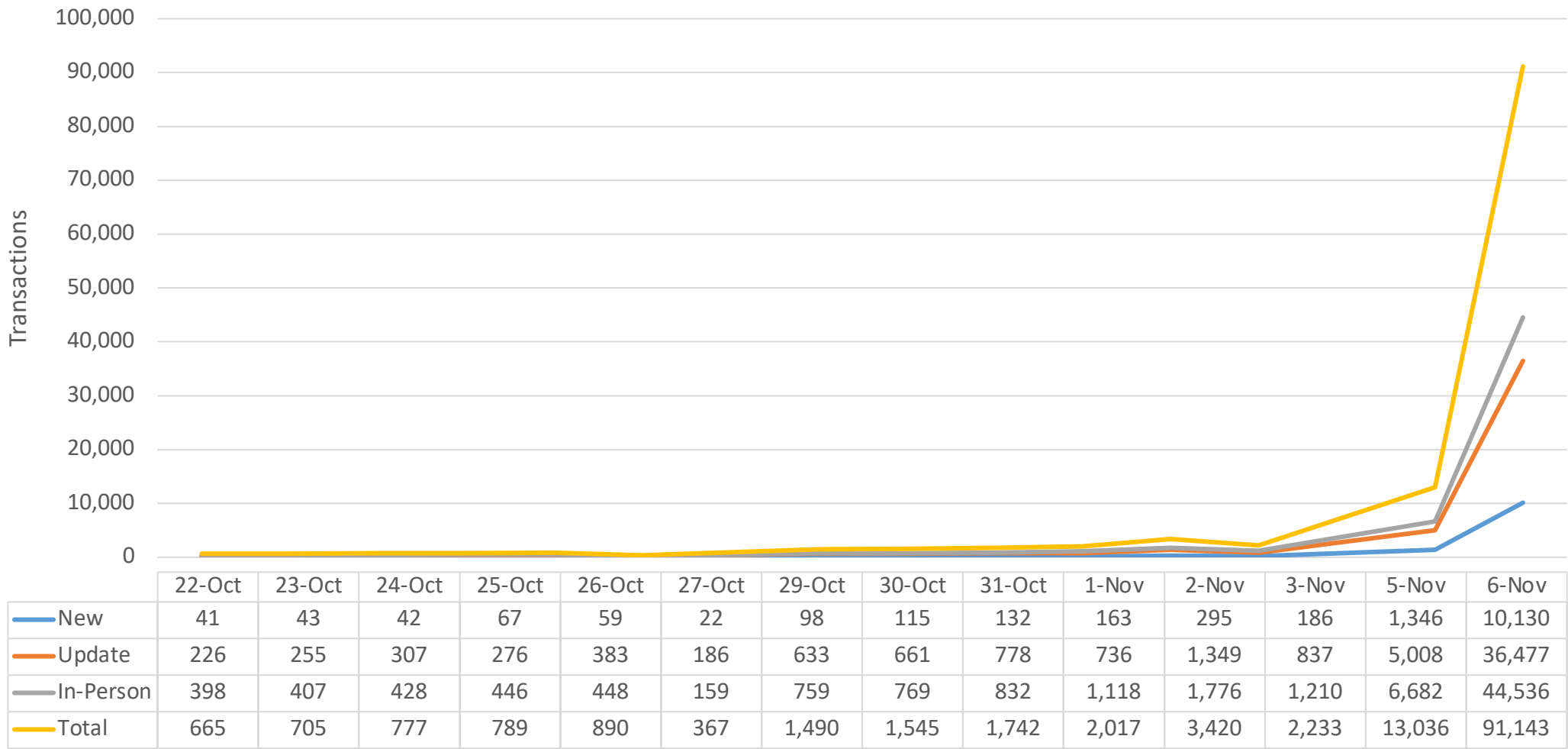
# The 4.7%--VSPC Usage

(aka/The Hockey Stick Slides)

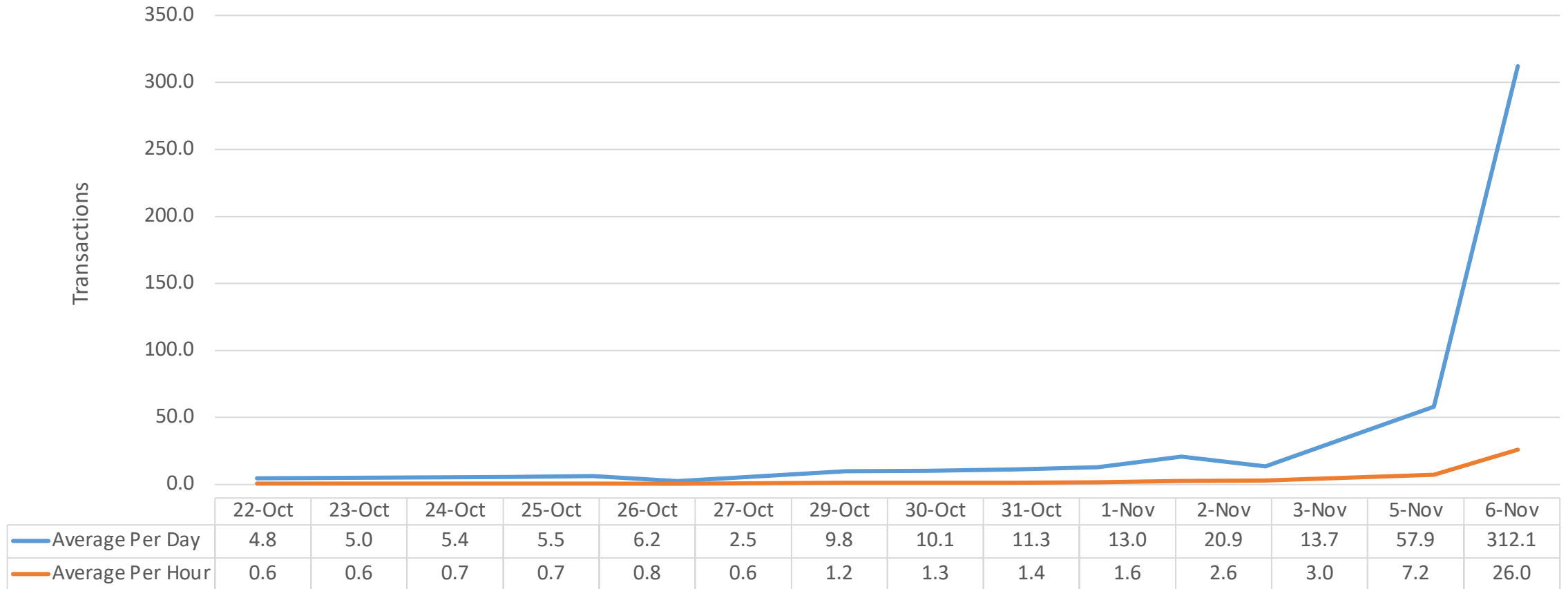
# Number of VSPCs Open By Day



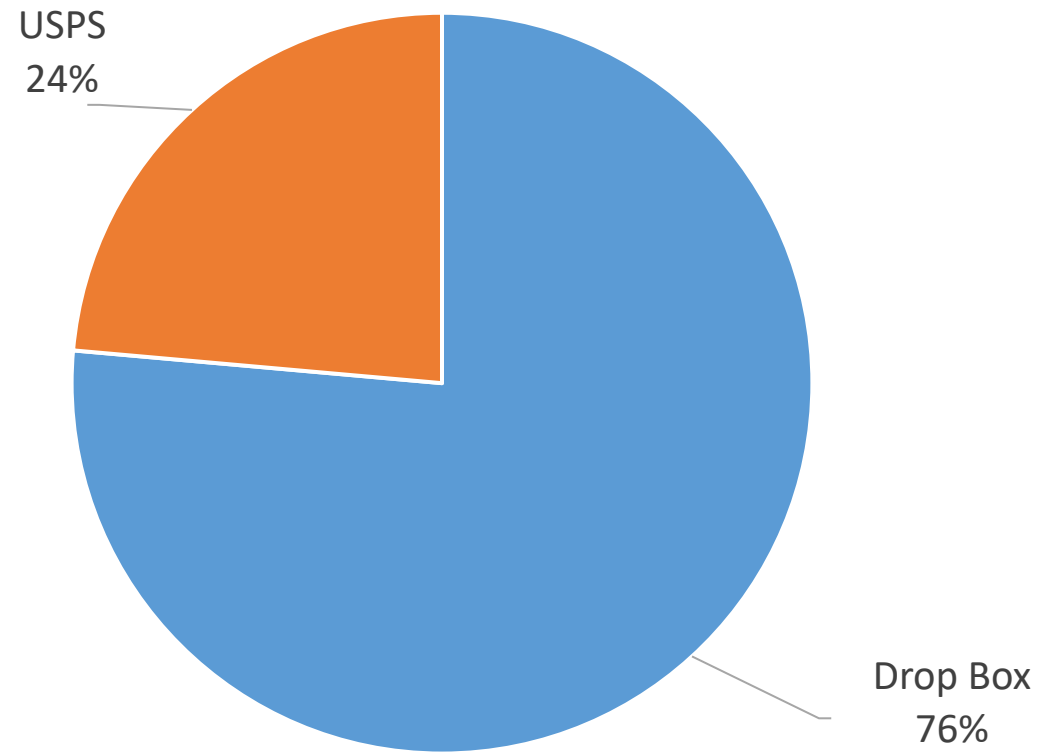
# 2018 General Election VSPC Usage by Day



# 2018 General Election VSPC Average Usage by Day

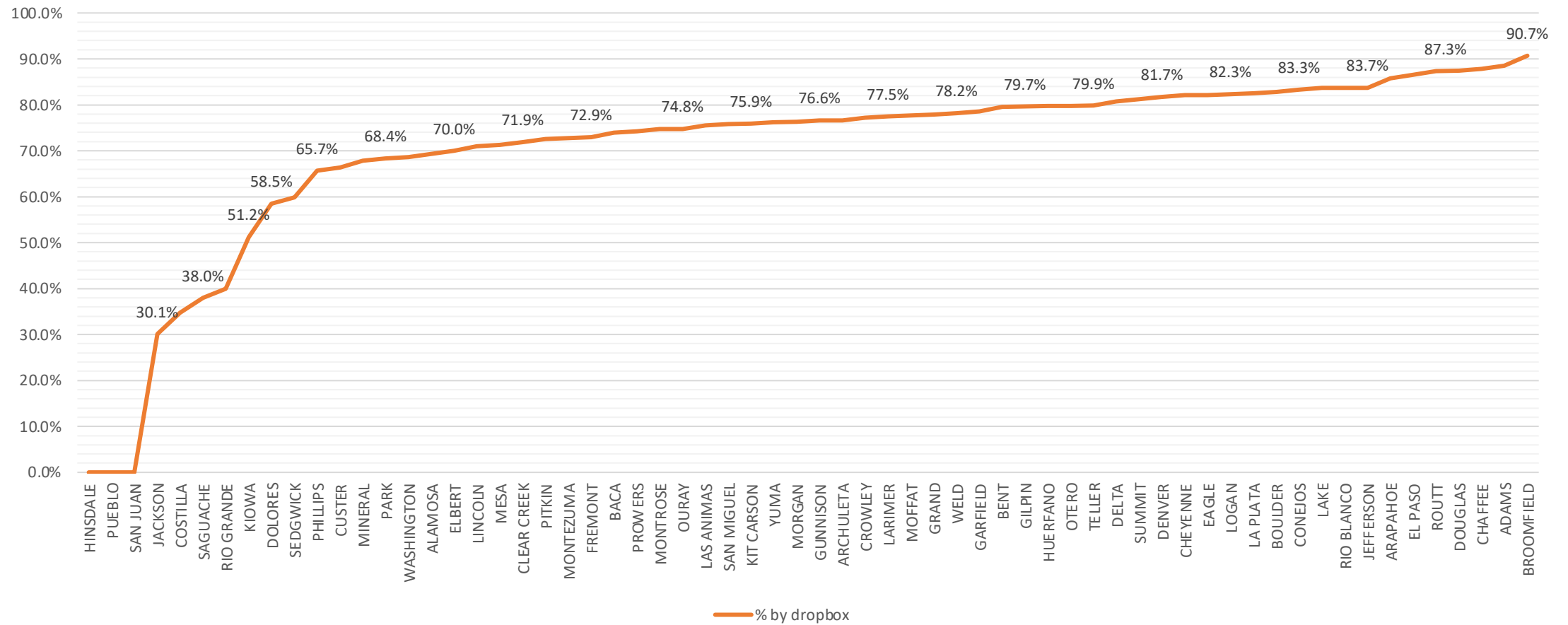


# 2018 General Election Ballot Return Method





# 2018 General Election Ballot Return Method



# 2018 Post-Election Changes

# Secretary Of State: Jena Griswold Defeats Wayne Williams

BY COLORADO PUBLIC RADIO STAFF NOV 6, 2018

SHARE THIS:



Jena Griswold speaks at the Democratic election night party on Tuesday, Nov. 6, 2018.

Meredith Turk/CPR News

Democrat Jena Griswold defeated incumbent Republican Wayne Williams in Colorado's Secretary of State race.

A promotional banner for Swallow Hill Music. It features two photos of musical acts: Mollie O'Brien &amp; Rich Moore on the left and 3HATTRIO on the right. The date '01.25.19' is prominently displayed in the center. Below the photos are social media icons for YouTube, Twitter, Facebook, and Instagram. At the bottom, there are buttons for 'MORE MUSIC' and 'LESS SHOW'.

CPR News NOW

Colorado Matters

LISTEN SCHEDULE

npr news

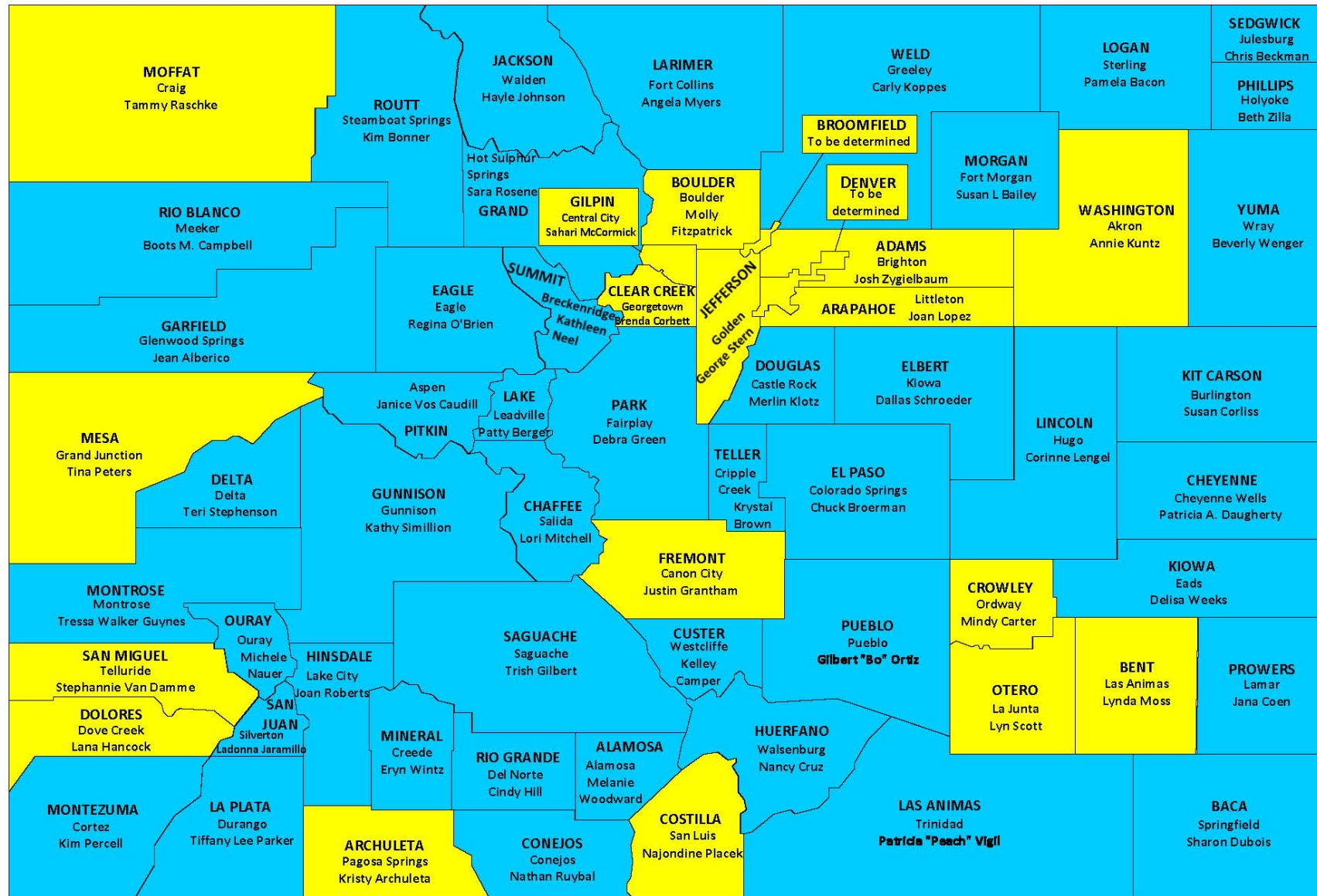
NPR Hourly News CPR Hourly News

Relevant.  
Insightful.  
Essential.

Support your values with  
a year-end gift to CPR.

DONATE NOW

## Colorado Counties and Clerks - 2019



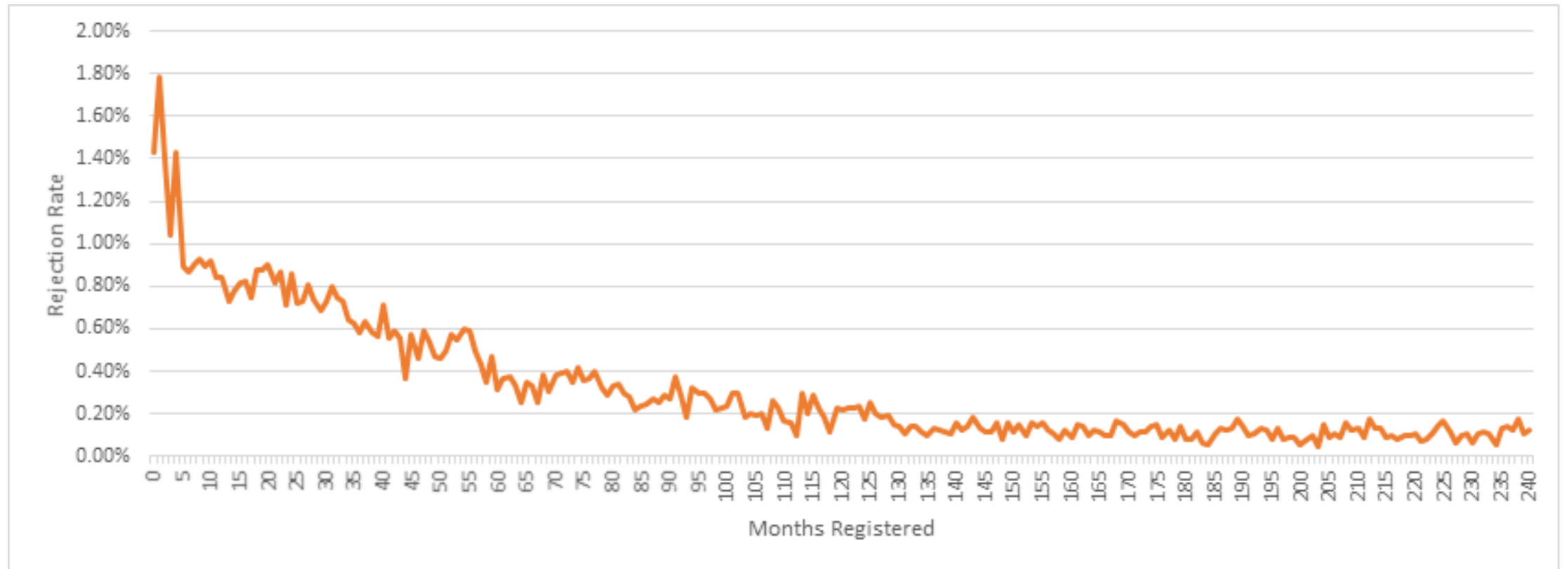
No Change (45)

New Clerk (19)

# Ballot Rejection Rates

# 2018 General Election

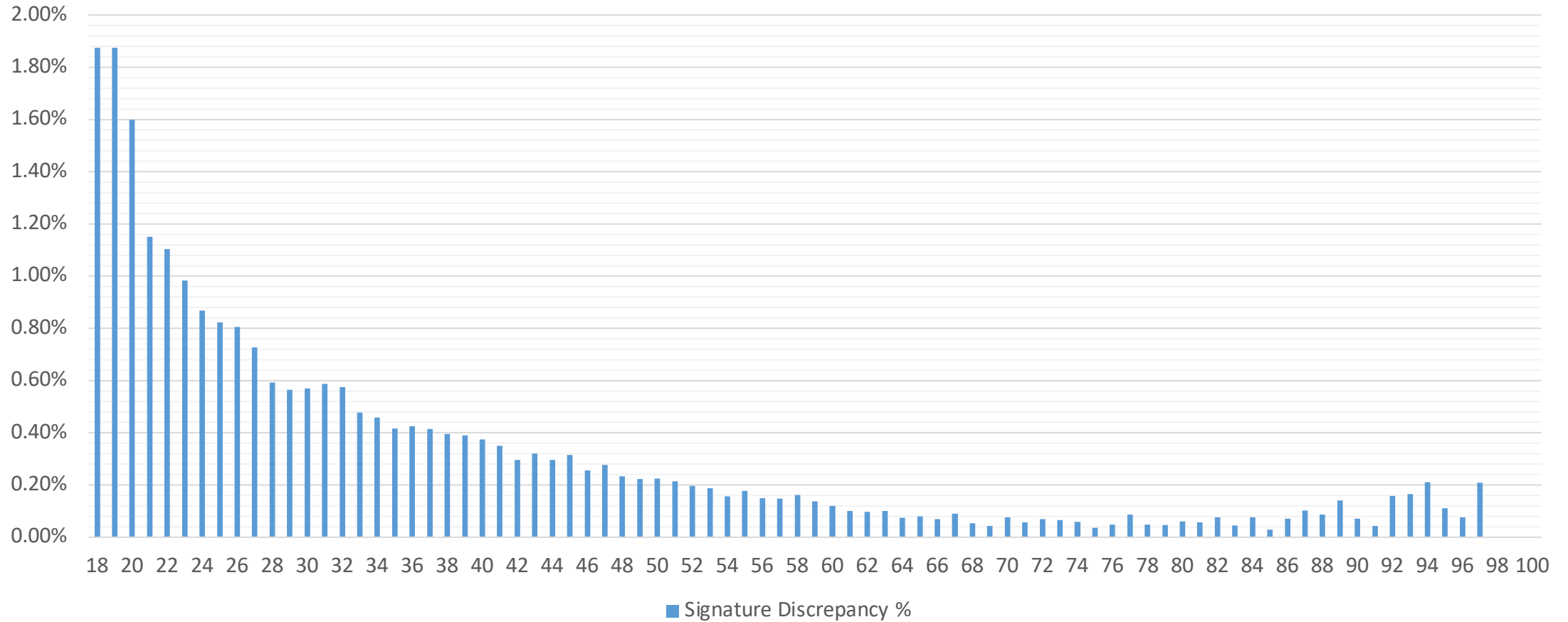
## Rejection Rate by Registration Duration



# 2018 General Election Signature Verification Likelihood

| Signatures in SCORE | Failed to Verify | Number of Voters | %            |
|---------------------|------------------|------------------|--------------|
| 0                   | 120              | 6,084            | 1.97%        |
| 1                   | 6,812            | 411,925          | 1.65%        |
| 2                   | 4,629            | 369,675          | 1.25%        |
| 3+                  | 14,365           | 3,009,493        | 0.48%        |
| <b>TOTAL</b>        | <b>25,926</b>    | <b>3,797,177</b> | <b>0.68%</b> |

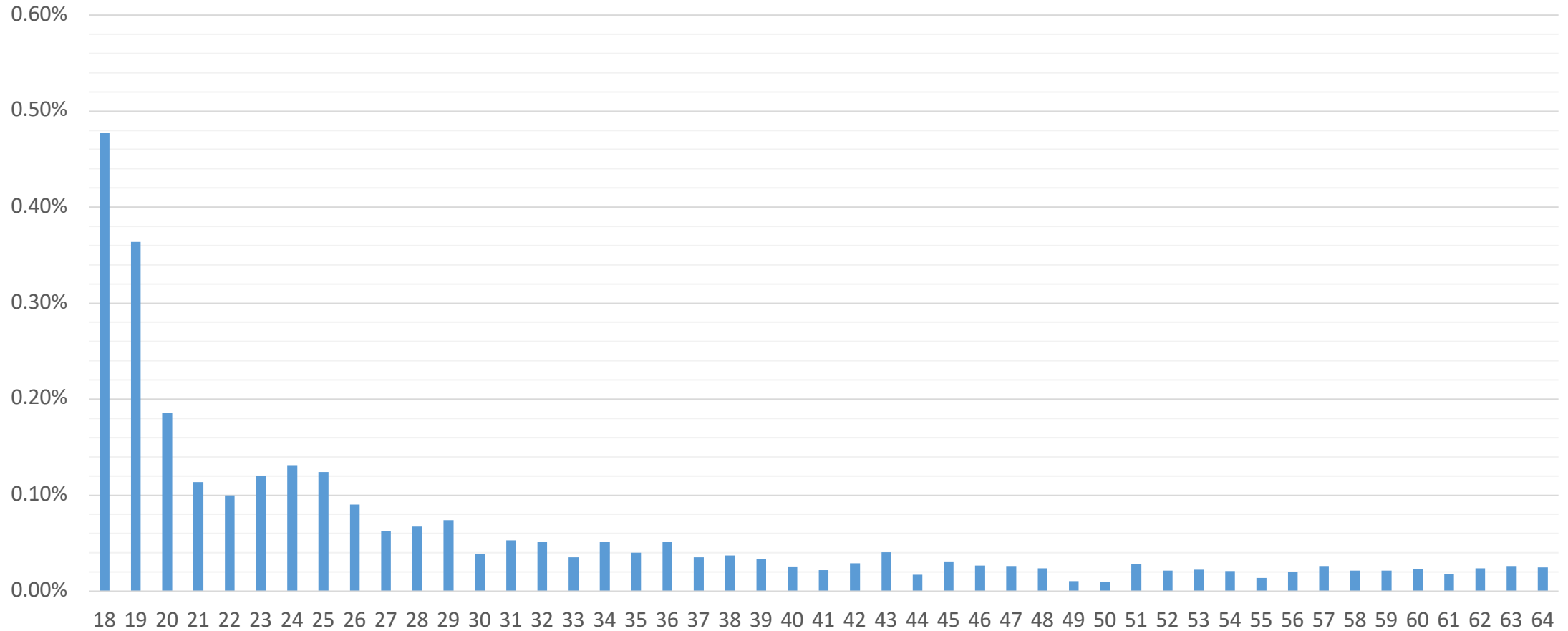
# 2018 General Election Signature Discrepancy Rate by Age





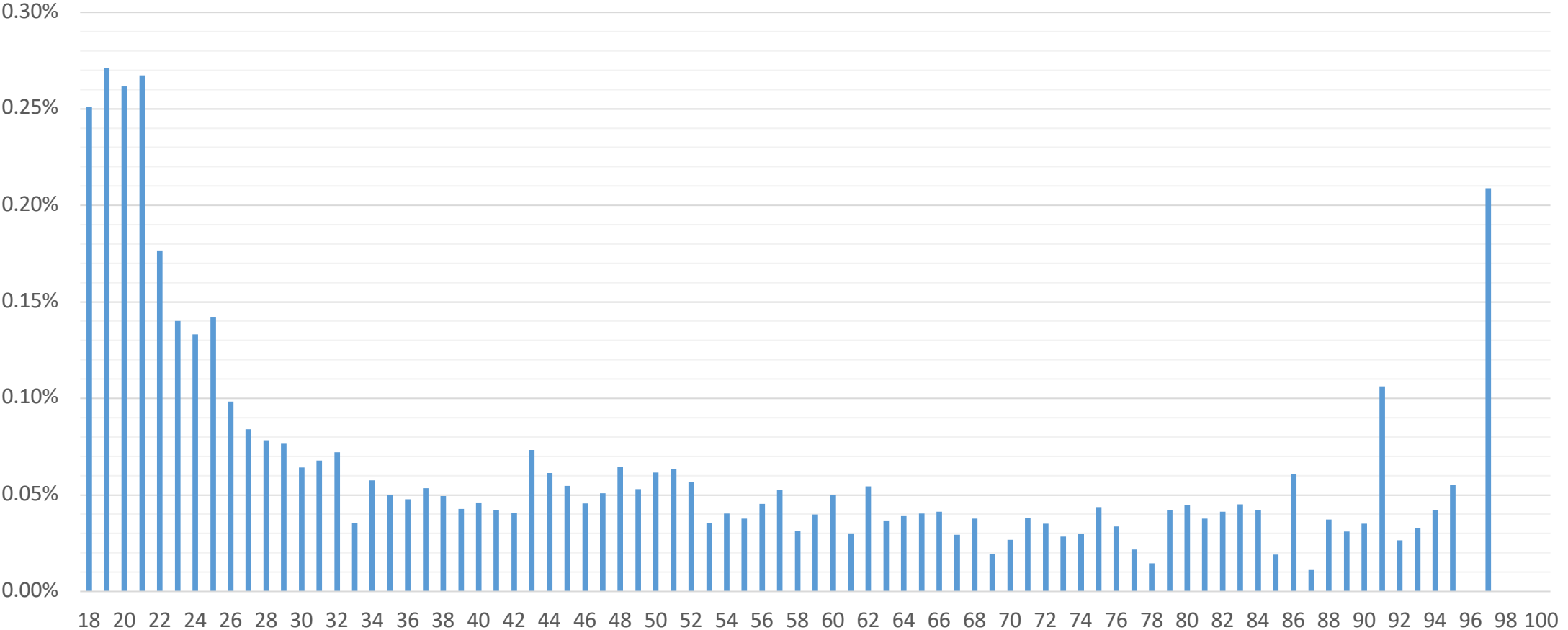
# 2018 General Election

## ID Deficient Rejection Rate by Age

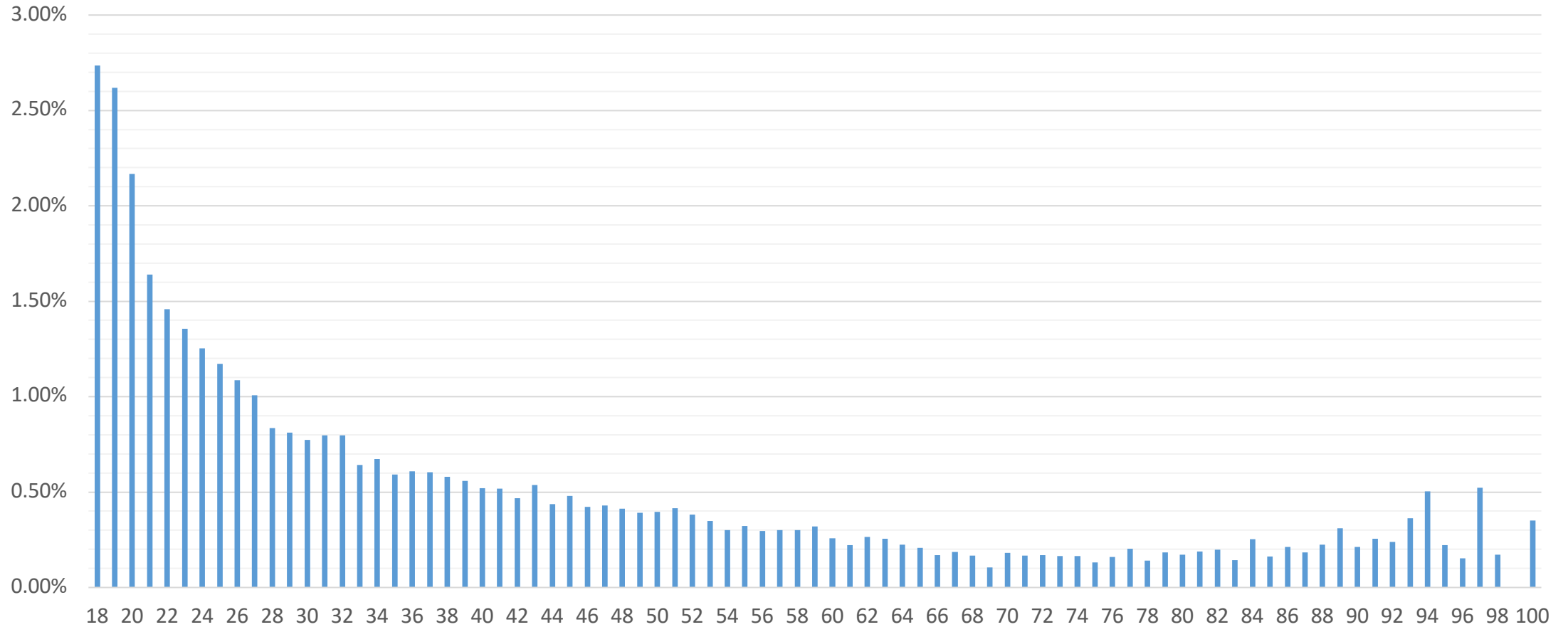


# 2018 General Election

## Ballots Rejected - Returned After 7pm, Nov. 6



# 2018 General Election Total Rejection Rate by Age



Questions?