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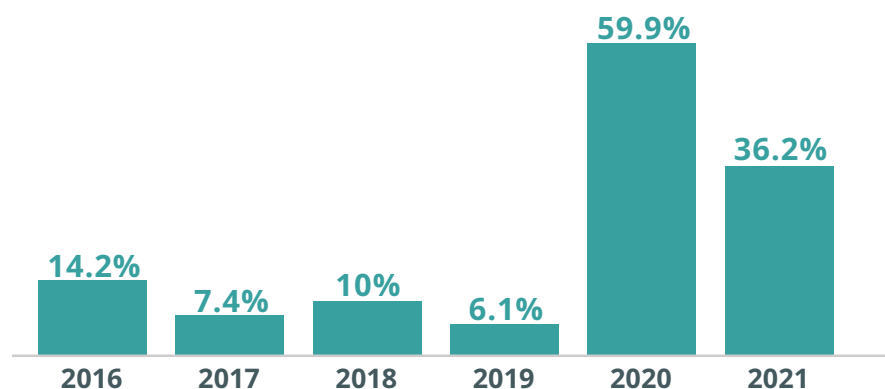 - CANDIDATE SEARCH

Methodology used by the Virginia

Public Access Project to estimate the November 2021 gubernatorial results by legislative district

Background

Virginia has never published the results of statewide elections within the boundaries of state legislative districts. In the past, the nonpartisan Virginia Public Access Project calculated district-level outcomes by aggregating Election Day precinct results. These calculations were "estimates" because there was no exact way to know the actual per-district results for a) precincts split between two or more legislative districts and b) provisional and absentee ballots that are tabulated at the locality level.

This rather simple methodology became inadequate starting in 2020, as no-excuse absentee voting and public health concerns led to a rapid expansion of absentee balloting.

Absentee Voting in Virginia

Because absentee votes are tabulated in a single Central Absentee Precinct (CAP) in each locality, most local election officials are unable to assign early votes to a specific precinct and instead can only report absentee votes for the locality as a whole. This means there are huge holes in our understanding of the geographic distribution of votes.

The redistricting process further complicates the November 2021 results. Seven weeks after Election Day, the Supreme Court of Virginia approved maps that reconfigured all 100 state House districts, 40 state Senate districts and 11 congressional districts.

Minimizing Modeled CAP Votes

The first step was to use complete results whenever possible, which would limit the uncertainty inherent in estimating CAP votes. We did this in two ways:

- Use complete precinct-level results available in five (Amherst County, Campbell County, Chesapeake City, Fairfax County and Floyd County) of Virginia's 133 localities. Election officials in these five localities had styled their November 2021 ballots to allow them to reallocate CAP ballots back to the precinct of each individual voter.
- When a locality fell entirely within a single district, we abandoned precinct-level results and relied on locality-wide results.

Share of Modeled Vote

	# of modeled votes	Avg. % of modeled votes	Districts < 2% modeled votes
House	751,168	22.9%	16 of 100
Senate	553,896	16.9%	11 of 40
Congressional	227,941	6.9%	3 of 11

Districts with > 2% of Modeled Vote

	Districts	Avg. % modeled votes	Districts > 30%	Highest %
House	84	27.4%	48	47.2%
Senate	29	23.3%	12	41.6%
Congressional	8	12.3%	0	22.3%

VPAP's Methodology for AB Distribution

VPAP staff developed two methods for reallocating AB votes.

Our first approach was to build a mathematical formula based on a regression model. This model did not perform as well as others, primarily because there was scant actual data available and most of that was from a single locality, Fairfax County.

Our second approach was to build a formula that used the results of ballots cast in person on Election Day as a predictor of the AB votes in the same precinct. This approach is similar to the methodology employed by others who worked on the AB distribution issue. Here is how our system worked:

Step 1: Estimate of number of early in-person ballots and mail ballots in each modeled precinct

We allocated ballots to precincts based on each precinct's share of Election Day votes.

```
Precinct early in-person ballot count
= (# of precinct Election Day ballots / # of locality Election
Day ballots) X # of locality early in-person ballots
Precinct mail ballot count
= (# of precinct Election Day ballots / # of locality Election
Day ballots) X # of locality mail ballots
```

Example for mail ballots: A locality has 10,000 mail ballots, and 20,000 Election Day ballots. Precinct has 500 election day ballots:

```
precinct mail ballots = (500 / 20,000) X 10,000
= 2.5% X 10,000
= 250 early mail ballots cast
```

Step 2: Estimate partisan allocation of AB votes per precinct

VPAP's formula uses a known variable — precinct-level Election Day votes — to inform the geographic reallocation of absentee votes (both mail and in-person early ballots) to precincts where voters live. For instance, if a precinct's Election Day results in November 2021 were slightly more Republican than locality-wide Election Day results, we assume the same precinct's absentee (AB) results also were slightly more Republican than the locality-wide AB results. (We did a separate calculation for each of the two types of AB votes, early, in-person ballots and mail ballots.)

```
Precinct mail % Dem
= locality-wide mail Dem% + (%precinct Election Day Dem - %
locality-wide Election Day Dem)
Precinct mail % GOP
= locality-wide mail GOP% + (%precinct Election Day GOP - %
locality-wide Election Day GOP)
```

Example for measuring Democratic partisanship:

- In Precinct A, VPAP estimated there were 250 mail ballots cast.
- In Precinct A, the Democratic candidate received 48% of Election Day votes cast.
- The locality had 15,000 mail ballots, with 9,000 (or 60%) cast for the Democratic candidate
- The locality had 20,000 Election-Day votes, with 10,000 (50%) cast for the Democratic candidate

```
Precinct early Dem %
= 60% + (48 - 50)
= 60% + -2
= 58%
Precinct early votes Dem
= 58% * 250
= 145
```

Step 3: Provisions for split precincts and provisional ballots

Split Precincts: VPAP determines the allocation of votes in a precinct that is split by two or more districts by the same proportion as the voting age population in each district.

Provisional Ballots: VPAP did not consider provisional ballots, which are tabulated at the locality level.

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