



To: State legislators, editorial board writers, political reporters, and interested parties

From: Marc Stier, Director, Pennsylvania Budget and Policy Center

Re: Elimination of Straight-Ticket Voting and related matters

Date: October 25, 2019

Introduction and Summary

Voting is the fundamental political right of all Americans. And so, election reform must mean making it easier, rather than harder, for Americans to cast their votes for every office. Sadly, there is a long legacy in this country of doing the opposite. Whether put forward by racists determined to protect white supremacy or good government “reformers” determined to weaken the political power of immigrants and the working class, American states have adopted a series of proposals—such as onerous barriers to registration, limited hours and times for voting, too-frequent purges of the voter rolls, and Voter ID laws—that, inadvertently or in many cases deliberately, have made it more difficult to vote.

A package of election reforms is now under consideration in the General Assembly. This introduction summarizes our preliminary analysis of the bill. We stress the word preliminary because there is much that is uncertain about the impact of the legislation—and unfortunately remain uncertain until we see its effects. Our evaluation of the legislation is made even more complicated because different elements of the bill will have opposite effects.

One portion of the legislation, which we review at length in this policy brief, is the elimination of straight-ticket voting. Our preliminary analysis leaves us concerned that the elimination of straight-ticket voting will lead to fewer votes in down-ballot, and especially state legislative elections in the future. And that effect is likely to be more dramatic in very high turnout elections, which we are expecting in 2020, and which may come to characterize American politics in the foreseeable future.

Our analysis shows that the elimination of straight-ticket voting will in:

- lead to an average increase in undervotes of 5,781 in highly competitive state Senate elections and 13,968 in highly competitive state House elections;
- lead in presidential election years to an average increase in undervotes of 17,903 in highly competitive state Senate elections and 18,568 in highly competitive state House elections;
- lead to an average reduction per district of 1241 votes in state Senate elections and 845 voters in state House elections, numbers that are greater than the margin of victory in one Senate and four House districts per year;
- lead to an average reduction per district of 3378 votes in state Senate elections and 1197 votes in state House elections, numbers that are greater than the margin of victory in two Senate and seven House districts per year;

- possibly lead to a disproportionate reduction in votes from Black and Hispanic people and people with low incomes.

Note that we define highly competitive in legislative races we analyzed in Pennsylvania and four other states as those in which the Democratic share of the two-party vote was between 45% and 55%.

The reduction in the projected number of votes cast in state legislative elections, if we did not have straight-ticket voting in Pennsylvania, may not seem great in absolute terms. But in a state with a number of competitive elections—elections that we hope will become more competitive thanks to bipartisan efforts to reduce gerrymandering—the votes lost due to the elimination of straight-ticket voting could conceivably shift party control in one or both houses of the General Assembly.

Voters with low incomes face structural barriers to participation in politics. It is much more difficult to take off from work to vote or to attend candidate forums when you are paid an hourly rate rather than a salary—and even more so if you have to work two or three jobs to make ends meet. It’s also more difficult to find time to vote if your income is low and you have child or senior care responsibilities that middle-class families can pay others to meet. In addition, because political candidates and advocacy groups believe that people with low incomes are less likely to vote, they get less attention from their campaigns.

Structural barriers to voting disproportionately affect Black and Hispanic voters because their average income is below that of white voters, because they receive less attention from political campaigns and, in the case of Hispanic voters, because of language barriers. (These barriers also affect other groups of Americans as well.)

While we are concerned about the elimination of straight-ticket voting reducing votes, the other changes in the legislation before the General Assembly might lead to more people voting and thus more votes in legislative races than are lost due to the elimination of straight-ticket voting. Two reforms proposed in the legislation are likely to be particularly beneficial.

The first is moving the deadline for registration closer to Election Day. The deadline is currently 30 days before Election Day and the proposed legislation moves the deadline to 15 days before the election. While this is not as substantial a change as we would prefer—the ideal is to have same-day registration—and there are serious questions about how effectively county officials will process late registrations especially the first time the provision goes into effect, this is an improvement over the status quo.

The second reform in the legislation is mail in voting.¹ Currently, Pennsylvanians may only request an absentee ballot if they are ill, disabled, or will be out of state on Election Day. The legislation enables any Pennsylvanian to vote by mail.

We have called for the implementation of both of these reform in our [We The People](#) policy paper on [“Making Voting Easier.”](#) The question we cannot answer at this point is how great the benefit will be of

¹ This is also known as “no-fault” absentee voting. But to avoid any constitutional question about whether absentee voting can be expanded beyond its current limits, the proposed legislation creates a new category of voters, those who vote by mail.

implementing the versions of these reforms in the legislation before the General Assembly now and in the future.

There is evidence that same-day registration can increase turnout by 5% to 7%.² But the effect of by moving the registration deadline 15 days closer to Election Day is likely to be substantially smaller.

There is also evidence that all mail-in voting increases voting turnout, although the estimate range quite widely from 2% to 7%.³ But the effect on turnout is likely to be greater if vote by mail is the sole method of voting. The legislation before the General Assembly only creates a vote by mail option. We are also not sure how soon any effect will be seen. Especially when mail-in voting is an option not a requirement, it takes time for voters to understand that is available and for political campaigns and advocacy groups to take advantage of it to encourage people to vote. It's quite possible that it could take two or three election cycles for the full benefit of the mail-in option to be realized. A strong effort by the state to advertise the availability of vote by mail would bring the benefits of it more quickly.

Our best judgment is that the net effect of all these changes will be small with minor changes in one direction or another in turnout and in undervotes in down ballot races. We are uncertain about the direction of change.

One final preliminary point: Later in the report we discuss the possible partisan impact of eliminating straight-ticket voting. It appears that Republicans have demanded it as part of the legislative package. And while that, as well as our own research, might be worrisome to Democrats, it is, as we point out below, hard to estimate the partisan effects of this part of the proposal. Much the same is true for the proposals to change the registration deadline or to create no-fault absentee voting.

At any rate, given the fundamental importance of voting, and our long history of limiting the franchise and suppressing voters and votes, our primary concern should be not the partisan impact of changes in election rules but whether they encourage or discourage voting for all.

Finally, there are two other elements of the legislation that are unalloyed goods—\$90 million to reimburse counties for the cost of new voting machines and \$4 million for census outreach. The latter is especially important in that it will help reduce the census undercount of Pennsylvanians. Doing so will help protect hundreds of millions of dollars that flow from the federal government to our citizens.

At this point, PBPC has not reached any conclusion about the overall merits of the legislation. We are uncertain about the critical question of whether the electorate will expand or contract as a result of the

² See Demos, "Everyone's America: State Policies for an Equal Say in Our Democracy and an Equal Chance in Our Economy," Spring 2018 edition, pp. 118-122; <http://www.demos.org/publication/everyones-america>. See also Brennan Center for Justice, "The Case for Automatic Voter Registration," New York, July 21, 2016;

³ A recent study found that Utah's experimentation with all-mail voting increased turnout by nearly 5%-7%.

<https://www.brennancenter.org/publication/caseautomatic-voter-registration>.

(<https://washingtonmonthly.com/wpcontent/uploads/2018/06/Utah-2016-Voter-File-Analysis-Pantheon-Analytics.pdf>).

Earlier research in Washington state found all-mail voting was associated with 2%-4% increases in turnout. See Gerber, A., Huber, G., & Hill, S. (2013). Identifying the Effect of All-Mail Elections on Turnout: Staggered Reform in the Evergreen State. *Political Science Research and Methods*, 1(1), 91-116. (<https://www.cambridge.org/core/journals/political-science-research-and-methods/article/identifying-the-effectof-allmail-elections-on-turnout-staggered-reform-in-the-evergreenstate/3725E51B9B7F331D77DC9B49130D7F7D> \).

legislation and, most importantly, whether any changes in either direction will protect the right of people of color to vote. We also don't know what amendments may be accepted before the legislation is ready for a final vote. As we learn more about the proposals in the current or any revised legislation, we may say more.

In the next section of this policy brief, we present our new data on undervotes in state legislative races in the last four Pennsylvania general elections. Then we present some reflections on how straight-ticket voting makes voting easier, especially for low-income, Black, and Hispanic voters. In the final section of the memo we address some philosophical issues about straight-ticket voting in the context of an overview of the economic, racial, and ethnic barriers to voting equality.

New Data on the Impact of Straight-Ticket Voting in Pennsylvania

Our first question is: How much does straight-ticket voting matter for votes in state legislative races?

Tables 1 and 3 contains a comparative analysis of the impact of straight-ticket voting on undervotes for state legislative states in five states. Two—Pennsylvania and Michigan—have straight-ticket voting. Three—Ohio, Florida, and Georgia—do not. (Tables 1 through 4 are found in landscape mode at the end of this document.)

Table 1 looks at all races. Table 3 looks only at races that were highly competitive.⁴

When it comes to highly competitive races, we found that undervotes for upper house elections in states without straight-ticket voting averaged about 3.1, which is almost 50% more than the 2.1% found in states with straight-ticket voting. In lower house races, undervotes in states without straight-ticket voting averaged 4.8%, which is about 75% greater than the 2.8% found in lower house races.

The differences between states with and without straight-ticket voting, however, varied depending on the election year. The difference was relatively small—and in the case of upper house races, non-existent, in off-year elections. But in presidential election years, the difference was much greater. In presidential election years, we found that undervotes for upper house elections in states without straight-ticket voting averaged about 4.6%, which is more than twice the 1.9% found in states with straight-ticket voting. In lower house races in presidential years, undervotes in states without straight-ticket voting averaged 6.7%, which is almost twice the 3.6% found in lower house races.

Why is the impact of straight-ticket voting greater in states during presidential election years? The reason, we suspect, is that far more people come to the polls to vote in presidential elections and that, because these voters tends to have less time and energy for political engagement and thus less information about individual political candidates, they are more likely to skip down-ballot races unless they have an

⁴ We defined “competitive races” as those in which the Democratic candidate received between 45% and 55% of the final vote. Even large variations in the cut-off points had little effect on the overall analysis which leads us to conclude that the publicity given to even highly competitive legislative races and the efforts of state legislative campaigns to gain attention for themselves do not have a dramatic effect on votes in these down ballot races. These effects are swamped by the variation from one election to another which is a product of more or less engaged and informed voters going to the polls.

opportunity to vote for them using the straight-ticket lever. (In the second part of this policy brief we look more closely at the structural reasons why some people are less engaged in politics than others.)

Our second question is: How significant is the impact of straight-ticket voting on votes in state legislative races in Pennsylvania?

Tables 2 and 4 apply the comparative analysis of tables 1 and 3 to legislative voting in the last four general elections in our state, again including only competitive races. Our goal here is estimate how many more undervotes there might have been in legislative races if we did not have straight-ticket voting in Pennsylvania.

The analysis is straightforward. We estimate the number of undervotes for legislative races in Pennsylvania without straight-ticket voting by assuming that the percentage of undervotes would be the same as found in the average of the three states without straight-ticket from table 1. We then subtract the current undervotes from the projected undervotes to arrive at an estimate of the additional undervotes we would have seen if straight-ticket voting had not been in place in the last four general elections in Pennsylvania.

We found that in highly competitive races, without straight-ticket voting there would have been an average increase in 22,140 undervotes in six competitive state Senate elections and 21,639 undervotes in 18 competitive state House elections in the last four general elections.

We saw above that straight-ticket voting makes a bigger difference in presidential elections. So, we found that in those years there would have been an average increase in undervotes of 17,903 in the six competitive state Senate elections and 18,468 in 18 competitive state House elections.

To determine the impact that this level of additional undervotes would have on election results, we looked at the average estimated reduction in votes in competitive House and Senate elections and then looked to see how many races in each year were decided by less than that amount.

We found that without straight-ticket voting there would have been an average of 1,241 fewer votes in six competitive state Senate election and 845 fewer votes in 18 state House elections in the last four election cycles. This average reduction in votes is greater than the average margin of victory in an average of one Senate and four House districts in each election cycle.

And, again, the estimated impact of eliminating straight-ticket voting would be greater in presidential election years. We found that without straight-ticket voting, there would have been an average of 3,378 fewer votes in the 6 competitive state Senate elections and an average of 1197 fewer votes in the 16 competitive state House elections in the last two presidential election years. The average reduction in votes is greater than the average margin of victory in two Senate and seven House districts in the average presidential election year.

The difference between what state legislative elections would look like now and what they would look like if straight-ticket voting were eliminated are not great in absolute terms. But the political impact of this change could be substantial. Pennsylvania is a competitive state. And many of us hope that bipartisan efforts to reduce gerrymandering will make legislative elections more competitive in the future. Thus, the

votes lost due to the elimination of straight-ticket voting could conceivably shift party control in one or both houses of the General Assembly.

We don't really know how the partisan balance might change. There is speculation that Republicans are supporting the elimination of straight-ticket voting because they expect that it will help them win legislative races in the next few election cycles. Straight-ticket voting is most important in presidential elections and tends to help the party that wins the presidential vote win down-ballot races. That might give legislative candidates in Southeast Pennsylvania, where support for Democratic presidential candidates is growing, some advantage. But in western Pennsylvania, where support for Republican presidential candidates is growing, eliminating straight-ticket voting could help Republican candidates for the General Assembly. And, at any rate, politics changes quickly and it's hard to predict the long-term partisan consequences of the elimination of straight-party on the partisan balance in the General Assembly.

The partisan impact of the elimination of straight-ticket voting should not, however, be our main concern. Given the importance of voting, and our long history of limiting the franchise and suppressing voters and votes, we should be wary of changing election rules in a way that discourages votes in any way. Eliminating straight-ticket voting will, we believe limit votes particularly in down ballot races. Whether the net effect of all of the proposed changes in the bill before the General Assembly will have that effect is, as we have pointed out, unclear.

We should especially take care not to reduce votes from Black and Hispanic voters. That, however, is a possible impact of the elimination of straight-ticket voting.

New Data on the Racial, Ethnic, and Class Impact of Eliminating Straight-Ticket Voting

We do not have really good data on who is more likely to use the straight-ticket lever in the voting booth. Data is available on the use of straight-ticket voting is only available for a limited number of counties. That data indicates that people of color are more likely to vote by means of the straight-ticket button. And that data supports our analysis of the third part of the essay, that explains why low-income, Black, and Hispanic voters are more likely to vote that way.

But we do have new evidence that suggest that voters who are Black, Hispanic, or have low incomes voters are somewhat less likely to vote in down-ballot races.

To show this we compared the percentage of Black and Hispanic voters in each state House district to the undervotes for those races. And then we compared the median income in each state House district to the undervotes for those races. We did this by constructing simple regression equations that use the percentage of the electorate that is Black or Hispanic and the median income in each district to predict the percentage of the undervote for state House races.

To make the results of our regression analysis understandable for those not trained in advanced statistics, we provide in tables 3, 4, and 5 a projection of the percentage of undervotes in state House races depending on the percentage of the voting age population that is Hispanic or Black and the median income of each district.

Table 3

Impact of Race on Undervotes in PA House Races				
Estimate Percentage of Undervote for State Representative Races Depending on Percent of Black Population				
	Election			
Percent of Black Population	2018	2016	2014	2012
5%	0.64%	2.02%	4.36%	6.25%
30%	1.01%	3.41%	5.59%	9.13%
55%	1.38%	4.81%	6.83%	12.02%
80%	1.75%	6.21%	8.06%	14.91%
90%	1.90%	6.77%	8.55%	16.06%

Table 4

Impact of Ethnicity on Undervotes in PA House Races				
Estimate Percentage of Undervote for State Representative Races Depending on Percent of Hispanic Population				
	Election			
Percent of Hispanic Population	2018	2016	2014	2012
5%	0.70%	2.20%	4.61%	6.52%
30%	1.40%	3.94%	6.72%	10.40%
55%	2.10%	5.68%	8.83%	14.28%
80%	2.80%	7.41%	10.93%	18.16%
90%	3.08%	8.11%	11.77%	19.71%

Table 5

Impact of Income on Undervotes in PA House Races				
Estimate Percentage of Undervote for State Representative Races				
	Election			
Median Income	2018	2016	2014	2012
\$ 95,000.00	0.38%	1.62%	0.00%	2.68%
\$ 70,000.00	0.60%	2.00%	3.09%	5.58%
\$ 55,000.00	0.73%	2.23%	5.35%	7.33%
\$ 40,000.00	0.86%	2.46%	7.61%	9.07%

What we find in these tables is that districts with a very high percentage of Black or Hispanic voters are already likely to have higher rates of undervoting in state legislative races than districts with a low percentage of Black or Hispanic voters. Districts in which 90% of the voting age population are Black are projected to have an undervote rate that is 2.7 times that of districts in which 5% of the voting age population are Black. Districts in which 90% of the voting age population are Hispanic are projected to have an undervote rate that is 3.4 times that of districts in which 5% of the voting age population are Hispanic.

We also find that districts with a higher median income are likely to have a lower rate of undervoting than districts with a lower median income. Districts in which the median income is \$40,000 are projected to have an undervote rate that is 3.5 times that of districts in which the median income is \$95,000.

As we explain in the next section of the report, we do not think that most of the variation in undervotes has anything to do with the race or ethnicity of voters. Black and Hispanic people on average have a lower average income than white people and this, we believe, explains most of the higher levels of undervoting we find among low-income voters, both white and black. Some of the variation may also be due to political candidates and advocacy groups not targeting their campaigns and mobilization efforts at Black and Hispanic people. And there may be some language barriers that make voting more difficult for Spanish speakers.

We cannot use this data to directly estimate the impact of the elimination of straight-ticket voting on the likelihood that Hispanic and Black votes and those of people with lower incomes would be lost in down-ballot races. But this evidence, combined with the incomplete evidence that Black and Hispanic voters are now more likely to use the straight-ticket lever than white voters, leaves us concerned.

The straight-ticket button or lever helps many voters complete their ballot. We think it is reasonable to infer from the evidence presented here that if, as we have argued, the elimination of straight-ticket voting will increase undervotes in down-ballot races, the impact of this change is likely to reduce the votes of Black and Hispanic voters more than white voters and low-income voters more than high-income voters. Again, moving the registration date closer to the election and creating a form of mail-in voting could have the opposite effect.

Reflections on the Importance of Straight-ticket Voting

In this last section of the report we turn from the data to more general questions about the importance of straight-ticket voting.

Supporters of what is called “good government” often deride the straight-party lever and say that voters should vote for the candidate and not the party. This maxim may be what voting would look like in a political community characterized by far more equality than we have today. But it ignores the way class, race, and ethnicity structure politics.

For many reasons—none of which are their fault—it is difficult for people with low incomes to meet the middle-class ideal. Most importantly, candidates spend a lot less time appealing to and mobilizing those with low incomes than voters with high incomes, partly because they vote at lower rates and partly because they are unlikely to make campaign contributions. And people with low incomes vote at lower rates for many reasons which, again, are not a reflection on their character or civic commitment.

Some of those reasons are fairly obvious, but we should quickly review them.

It is much more difficult to take off from work when you are paid an hourly rate rather than a salary—and even more so if you have to work 2 or 3 jobs to make ends meet. It’s also more difficult to find time to vote if your income is low and you have child or senior care responsibilities that middle-class families can pay others to meet.

It is also more difficult for folks with low incomes to spend long hours reading the newspaper, let alone attend candidate forums, to become better informed about issues and candidates. Not only do they not have time to do so but they might not have the same degree of literacy as middle-class voters. That not only makes acquiring information about candidates more difficult, but it makes finding candidates on our often-long ballots hard as well.

Thus, low-income voters—and others as well—use party as a shorthand for most voting decisions, one that saves them time and effort to become informed about each and every candidate. Unless a candidate from the “other” party has really appealed to them, they tend to vote for their own party in the General Election.

The straight-ticket button makes it easier for voters to vote for candidates of one party alone. And that makes voting faster which not only makes it easier for voters to get in and out of the polling booth faster but reduces waiting time at the polls—which also makes voting easier for everyone. And given the constraints on their time discussed above, this is especially important for low-income voters.

At a time when party division is greater than it has been in the past, voting for the party rather than the candidate makes even more sense.

The straight-ticket lever also helps ensure that Black and Latinx voters can vote in down-ballot races. They find it harder to vote because, on average, their incomes are lower than white people. But there are also some barriers that make voting even harder for them. It’s clear, for example, that political candidates and advocacy groups have only recently begun to put a great deal of effort into appealing to Black and Latinx voters. And the gap between the effort made to encourage Black and Latinx voters and that made to encourage white voters is still substantial.

Latinx voters—some of whom are Black—also face a language barrier to voting, as do naturalized citizens from many countries in Asia and non-English speaking parts of Africa as well. Even if there is a Spanish translation of the ballot, political communications in Spanish are still relatively less common than in English. And while all voters, and especially less literate ones, have trouble with our often long ballots, those difficulties are magnified for non-English speakers.

The result of all these barriers to voting is that voters with low incomes or those who are Black and/or Hispanic are more likely not to vote for every race on the ballot. The evidence we presented showed that the percentage of undervotes in state House races goes up as the percentage of Black and Hispanic voters goes up. And the percentage of undervotes is higher when income is lower.

We can all hope for a time when everyone is prosperous enough to have the time and energy to focus on politics instead of on providing for their families so that every voter can meet the middle-class ideal and become well informed about every candidate running for office.⁵

⁵ We note in passing that the high level of undervotes for judges in primary elections even in middle-class districts shows us that a significant number of middle-class people fail to meet this ideal now.

But election rules should be designed to maximize the votes of people in the country in which we live, not the country of our ideals.⁶ And in the country and state in which we live, barriers of class, race, and ethnicity reduce the number of voters and the votes in down-ballot races of many of our fellow citizens.

We should not be wary of taking steps that makes voting in all races harder for anyone. For that reason, we are concerned about any legislation that calls for the elimination of straight-ticket voting.

⁶ Another argument for eliminating straight-ticket voting is that it is a barrier to third parties and independent candidates in our political system. This is a complicated issue. Our view, however, is that given the structural features of our politics that support the two-party system (in particular, plurality election and single-member districts vs. proportional representations) third party and independent candidates for office are more likely to distort elections than improve them. That is, in most circumstances third party and independent candidacies help elect candidates that hold views that are opposed to those of a majority of citizens. We would like to see major structural changes in our political system that would make it possible for a greater diversity of candidates and parties to actually win elections. But of all the barriers to that today, straight-ticket voting is a minor problem.

Table 1

Impact on Straight Ticket Voting on Undervotes for State Legislative Races--All Districts														
Percentage of Undervotes (state legislative relative to race with highest vote total)														
Election Year	2018		2016		2014		2012		All Years		Presidential Years		Off-Years	
Legislative Chamber	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
States with Straight Ticket Voting														
Pennsylvania	6.7%	6.7%	4.7%	8.7%	3.8%	9.9%	4.3%	9.8%	4.9%	8.8%	4.5%	9.3%	5.3%	8.3%
Michigan	2.2%	3.9%	*	4.3%	3.8%	4.2%	*	5.3%	3.0%	4.4%	*	4.8%	3.0%	4.1%
Average	4.5%	5.3%	4.7%	6.5%	3.8%	7.1%	4.3%	7.6%	4.3%	6.6%	4.5%	7.0%	4.1%	6.2%
States without Straight Ticket Voting														
Ohio	1.6%	4.2%	5.0%	12.3%	4.3%	5.9%	8.5%	7.9%	4.8%	7.5%	6.7%	10.1%	2.9%	5.0%
Arizona	4.3%	20.6%	11.0%	30.5%	11.0%	22.9%	10.9%	28.2%	9.3%	25.5%	10.9%	29.3%	7.6%	21.8%
Florida	2.3%	2.0%	6.7%	6.6%	2.6%	6.6%	7.3%	4.3%	4.7%	4.9%	7.0%	5.5%	2.4%	4.3%
Georgia	11.1%	11.3%	16.5%	17.0%	15.9%	17.3%	17.4%	17.3%	15.3%	15.7%	17.0%	17.2%	13.5%	14.3%
Average	4.8%	9.5%	9.8%	16.6%	8.4%	13.2%	11.0%	14.4%	8.5%	13.4%	10.4%	15.5%	6.6%	11.3%
Average (excluding Arizona)	5.0%	5.8%	9.4%	11.9%	7.6%	9.9%	11.1%	9.8%	8.3%	9.4%	10.2%	10.9%	6.3%	7.9%

Source: PBPC analysis of election returns. *Michigan only has state senate races every four years in non-presidential election years.

Table 2

Impact on Straight Ticket Voting on Undervotes for State Legislative Races--Highly Competitive Districts														
Percentage of Undervotes (state legislative relative to race with highest vote total)														
Election Year	2018		2016		2014		2012		All Years		Presidential Years		Off-Years	
Legislative Chamber	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
States with Straight Ticket Voting														
Pennsylvania	3.5%	0.5%	1.6%	1.7%	1.1%	0.7%	2.3%	3.6%	2.1%	1.7%	1.9%	2.7%	2.3%	0.6%
Michigan	2.4%	3.4%	*	3.8%	2.4%	3.0%	*	5.3%	2.4%	3.9%	*	4.5%	2.4%	3.2%
Average	2.9%	1.9%	1.6%	2.8%	1.8%	1.9%	2.3%	4.5%	2.1%	2.8%	1.9%	3.6%	2.4%	1.9%
States without Straight Ticket Voting														
Ohio	3.4%	1.9%	3.5%	10.5%	0.3%	1.7%	3.9%	7.9%	2.8%	5.5%	3.7%	9.2%	1.9%	1.8%
Arizona	4.3%	20.6%	11.0%	30.5%	11.0%	22.9%	10.9%	28.2%	9.3%	25.5%	10.9%	29.3%	7.6%	21.8%
Florida	1.5%	2.2%	5.6%	5.9%	2.0%	5.9%	4.0%	3.5%	3.3%	4.4%	4.8%	4.7%	1.8%	4.1%
Georgia	1.7%	2.2%	5.7%	7.4%	0.0%	3.9%	5.1%	5.1%	3.1%	4.7%	5.4%	6.3%	0.9%	3.1%
Average	2.7%	6.7%	6.4%	13.6%	3.3%	8.6%	6.0%	11.2%	4.6%	10.0%	6.2%	12.4%	3.0%	7.7%
Average (excluding Arizona)	2.2%	2.1%	4.9%	7.9%	0.8%	3.8%	4.3%	5.5%	3.1%	4.8%	4.6%	6.7%	1.5%	3.0%

Source: PBPC analysis of election returns. *Michigan only has state senate races every four years in non-presidential election years.

Table 3

Impact on Straight Ticket Voting on Undervotes for State Legislative Races--All Districts														
Percentage of Undervotes (state legislative relative to race with highest vote total)														
Election Year	2018		2016		2014		2012		All Years		Presidential Years		Off-Years	
Legislative Chamber	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
States with Straight Ticket Voting														
Pennsylvania	3.5%	0.5%	1.6%	1.7%	1.1%	0.7%	2.3%	3.6%	2.1%	1.7%	1.9%	2.7%	2.3%	0.6%
Michigan	2.4%	3.4%	*	3.8%	2.4%	3.0%	*	5.3%	2.4%	3.9%*		4.5%	2.4%	3.2%
Average	2.9%	1.9%	1.6%	2.8%	1.8%	1.9%	2.3%	4.5%	2.1%	2.8%	1.9%	3.6%	2.4%	1.9%
States without Straight Ticket Voting														
Ohio	3.4%	1.9%	3.5%	10.5%	0.3%	1.7%	3.9%	7.9%	2.8%	5.5%	3.7%	9.2%	1.9%	1.8%
Arizona	4.3%	20.6%	11.0%	30.5%	11.0%	22.9%	10.9%	28.2%	9.3%	25.5%	10.9%	29.3%	7.6%	21.8%
Florida	1.5%	2.2%	5.6%	5.9%	2.0%	5.9%	4.0%	3.5%	3.3%	4.4%	4.8%	4.7%	1.8%	4.1%
Georgia	1.7%	2.2%	5.7%	7.4%	0.0%	3.9%	5.1%	5.1%	3.1%	4.7%	5.4%	6.3%	0.9%	3.1%
Average	2.7%	6.7%	6.4%	13.6%	3.3%	8.6%	6.0%	11.2%	4.6%	10.0%	6.2%	12.4%	3.0%	7.7%
Average (excluding Arizona)	2.2%	2.1%	4.9%	7.9%	0.8%	3.8%	4.3%	5.5%	3.1%	4.8%	4.6%	6.7%	1.5%	3.0%

Table 4

Potential Lost Votes If PA Eliminates Straight Ticket Voting--Highly Competitive Districts														
Election Year	2018		2016		2014		2012		All Years		Presidential Years		Off-Years	
Legislative Chamber	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
Undervotes in competitive race	32,578	4,582	5,825	68,338	1,763	78,378	25,270	236,712	16359	97002	15547	152525	17170	41480
Competitive races each year	8	31	3	107	2	110	9	131	6	95	6	119	5	71
Projected undervotes in PA w/o STV	25,225	60,154	24,010	444,503	5,282	165,558	66,805	414,932	30330	271287	45407	429718	15254	112856
Estimated undervotes in PA w/o STV excluding Arizona	20,450	18,755	18,320	259,610	1,210	73,929	48,580	204,414	22140	139177	33450	232012	10830	46342
Total votes for highest voting race	924,841	895012	373,111	3279542	158,913	1,922,454	1,117,632	3712898	643624	2452476	745371	3496220	541877	1408733
Projected average additional undervotes per district w/o STV	(919)	1,793	6,062	3,516	1,759	793	4,615	1,360	2879	1865	5338	2438	420	1293
Projected average additional undervotes per district w/o stv excluding Arizona	(243)	457	366	1,788	24	(40)	972	(247)	280	489	669	771	-109	208
Races decided by projected average undervotes per district w/o STV or less	0	2	1	10	0	1	2	3	1	4	2	7	0	2
Races decided by projected average undervotes per district w/o STV or less excluding Arizona	0	2	0	9	0	0	-	3	0	4	0	6	0	1

Note: The estimated undervotes w/o STV is calculated by assuming that the undervote in PA will be equal to the average undervote in four states without STV.