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What to Expect When You're Expecting New Legislative Districts: Why the New District Maps Will Look So Different

Introduction

Sometime in the next ninety days—and perhaps much sooner—we expect to see the Legislative Redistricting Commission (LRC) release its first draft of a plan for the redistricting of Pennsylvania's state House and Senate districts.

This policy brief aims to give Pennsylvania's citizens, community leaders, media, and advocates some idea of what to expect from the forthcoming LRC plan.

To state our conclusion as succinctly as possible: we expect the LRC to give us fair, nonpartisan legislative districts for the first time in at least two decades. Chairman Mark Nordenberg is leading **the effort to undo the effects of twenty years of Republican gerrymandering and create districts that recognize demographic changes over the last decade. As a result, fairly drawn districts lines will look very different than current ones.**

The Goal of Fair Districts

The goal is clear for those of us who seek fair legislative districts. We seek districts that are not biased in favor of either political party; that are not focused on protecting incumbent legislators; that are as equal in population as possible; that respect political boundaries and communities of interest; and that—for the first time—make it possible for Black and Latinx people to influence legislative elections in ways that enhance, rather than minimize, their political power.²

We expect that the legislative maps produced by the LRC will meet this goal and, that as a result, they will look radically different from the current maps. Indeed, we think that the new maps are likely to look like they were drawn on a clean slate with little reference to the existing maps.

There are two reasons for this conclusion.

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² As advocates for Black and Latinx people have pointed out, enhancing their power in legislative elections does not mean maximizing the number of districts in which they are a majority. First, Black and Latinx candidates for office have shown that they can win legislative races in districts where people like them are not a majority. And second, we have seen that white legislators often represent the interests of Black and Latinx voters when they make up a substantial minority of the population in their legislative district. Legislative redistricting plans that seek to maximize the number of majority-minority districts have sometimes led to district plans that benefit Republicans because they pack Democratic voters into a smaller number of districts. And they can minimize the ability of Black and Latinx voters both to elect people like themselves to office in districts where they are not a majority and to influence a larger number of legislators, including white legislators.

The first is that the state has seen major demographic changes in the last decade, which require a shift of an unusually large number of legislative seats from the western to the central and eastern parts of the state.

The second is that the current legislative district lines are a product of two cycles of extreme gerrymandering—districts drawn by LRCs that were dominated by Republicans who designed district lines that heavily favored their incumbents and party.

New district lines that account for demographic changes, and that avoid a partisan tilt, will necessarily look very different from the current ones. There may well be complaints about new district maps that look so different from current maps. However, we should expect and welcome this. A map that corrects existing historic gerrymandering will look different. A map that addresses population changes will look different. A map that does both will look very different.

The legislative redistricting process this year gives Pennsylvania an opportunity to overcome decades of gerrymandering and, in doing so, sets our state government in a new and fairer direction. For the first time in decades we have confidence that the Legislative Reapportionment Commission will do this. The decisive fifth member of the commission, Mark Nordenberg, distinguished service professor of law and chancellor emeritus at the University of Pittsburgh, appears committed to producing legislative maps that meet widely accepted criteria of fairness. His public statements and unparalleled commitment to transparency, as well as his long and distinguished career of public service, certainly point in this direction.

This paper aims to explain the context in which this work will be done and give some idea of what the results will be. In doing this, it aims to prepare Pennsylvanians to welcome legislative district maps unlike those in place today.

After a section introducing the legislative redistricting process, we turn to sections that look at demography and political history. In the final section we offer remarks about what new and fair legislative districts should look like and why that goal will likely be met.

The Legislative Redistricting Process

The PA Constitution and legislative redistricting

While congressional district lines are drawn by legislation that must pass the House and the Senate and then be signed by the governor, [Article 2, Section 17](#) of the Pennsylvania Constitution gives the power to draw district lines for the 50 state Senate seats and the 203 state House seats to the Legislative Reapportionment Commission (LRC).

The Legislative Reapportionment Commission uses census data to draw district lines. Article 1, section 2 of the United States Constitution requires that a census be taken every ten years for the purpose of redrawing election districts for the U.S. House of Representatives. While Public Law 94-17 requires the Census Bureau to deliver census data to the states by April 1, 2021, delays in conducting the census due to COVID-19 delayed the release and the data wasn't released to the state until August 12, 2021. The data was certified on October 26, 2021. The PA Constitution gives the LRC 90 days from that date to release a redistricting plan, but most observers expect it to release a plan much sooner.

The Legislative Reapportionment Commission

The Legislative Reapportionment Commission consists of five members: the leaders of each of the House and Senate Democratic and Republican caucus, or deputies appointed by each of them, and a

chairperson to be selected by those members—or, if they cannot reach agreement, by the Pennsylvania Supreme Court.

The 2021 Legislative Reapportionment Commission members are Senators Jay Costa (D-Allegheny) and Kim Ward (R-Westmoreland) and Representatives Kerry Benninghoff (R-Centre and Mifflin) and Joanna McClinton (D-Philadelphia). The Pennsylvania Supreme Court chose Mark A. Nordenberg, professor of law at the University of Pittsburgh, to chair the Commission.

Demography and Redistricting

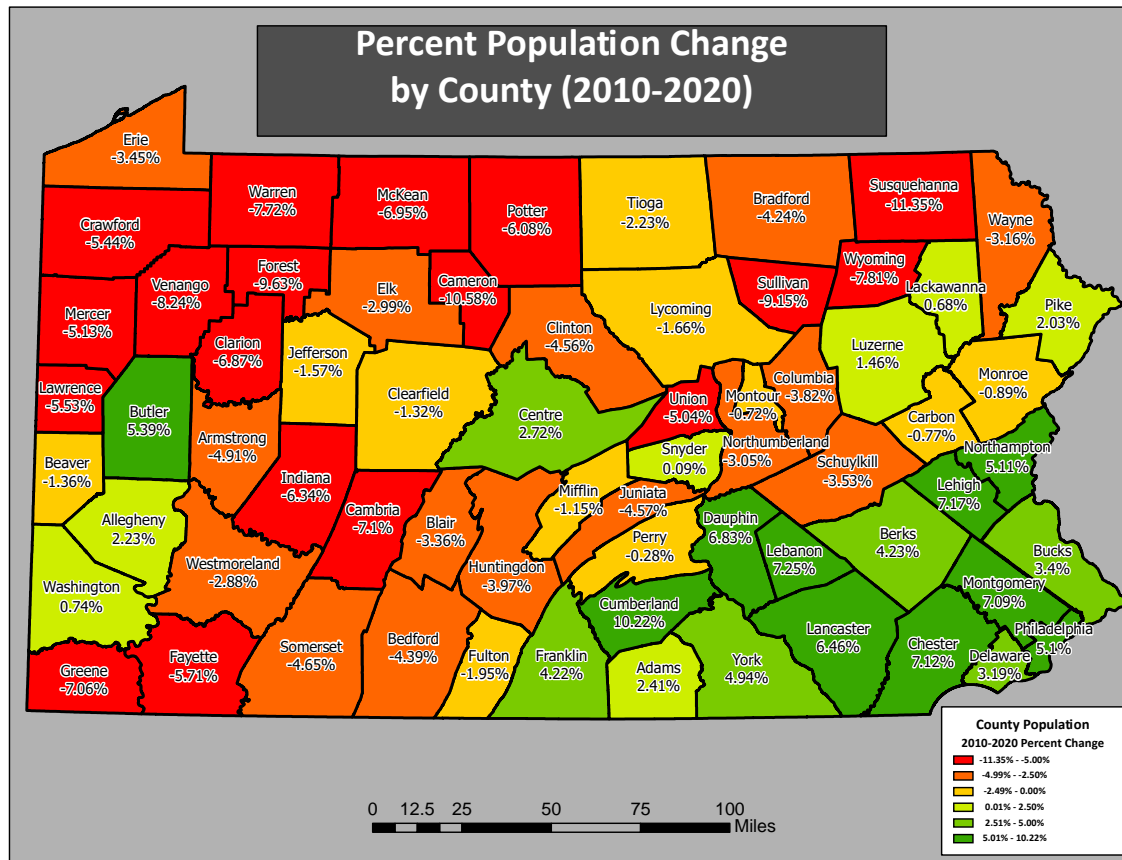
Population growth and shifts in the period 2010 to 2020

Census data show that Pennsylvania's population grew by 300,321, or 2.4%, between 2010 and the end of 2020. Despite this population growth, the state will lose one seat in the House of Representatives because the population of the entire country grew by 22,703,742 or 7.4%.

The overall change of population in Pennsylvania was not uniform by any means. Figure 1 shows that there were areas of the state where population declined: in the northern tier, the central area of the state (besides Centre County), and western part of the state outside Allegheny, Butler, and Washington Counties. The population of 43 counties decreased. In four counties, the population declined by 10% or more. In 14 counties, the population declined by between 5% and 9.9%. In another 14 counties, the population declined by 2.5% to 4.99%. And in 11 counties, there was a population decline of up to 2.5%. In total, 43 of Pennsylvania's 67 counties lost population between 2010 and 2020.

On the other hand, 14 counties increased population in the last 10 years. Nine counties in Pennsylvania saw population increases of 5% or more. In eight counties, the population increased by 2.51% to 5%. And in seven other counties the population increased by up to 2.5%.

Figure 1



Pennsylvania regions

The easiest way to understand the impact of population shifts on changes in the distribution of seats in the state House and Senate is to look at how they will affect ten regions of Pennsylvania. For our purposes we will define those regions as northwest Pennsylvania, Allegheny County, southwest Pennsylvania, west central Pennsylvania, east central Pennsylvania, rural northeast Pennsylvania, urban northeast Pennsylvania, the Lehigh Valley and Berks County, the Philadelphia collar counties, and Philadelphia (Figure 2).

Figure 2



Each region should roughly have the same share of House and Senate districts that it has of the state's population.

The Impact of population shifts on House seats

The impact of population shifts on the regional distribution of House seats can be seen in table 1. Five of the ten regions of the state, located in western and northeast Pennsylvania, have lost population relative to the state as a whole. Allegheny County has retained almost the same share of population, and four of the ten regions located in eastern Pennsylvania—east central, Lehigh Valley and Berks County, and Philadelphia—have gained population relative to the state as a whole. Together, those four regions should gain a total of 3.36 seats in the House, while the other six regions should lose the same number of seats to ensure that each region has the appropriate number of seats given its share of population. The east central and collar county regions should each gain one seat while the Lehigh Valley and Berks County region and Philadelphia should gain one half and two-thirds of a seat respectively. The northwest region should lose about one seat while the southwest, west central, rural northeast, and urban northeast should lose between .8 and .35 seats.

Of course, seats can only be apportioned in whole numbers, so a number of seats will be located in more than one region. The LRC will have some options in deciding where to create such seats and that will enable it to take into account other important criteria for fair redistricting such as not dividing county and local governments, keeping communities of interest together, removing any vestiges of racial bias, and reflecting the overall political makeup of the state. The general trend is clear, however: there will have to be some shifting of seats, roughly from the western part of the state to the eastern part.

Table 1

Region	2010 Share of Population	2010 HDs	2020 Share of Population	2020 HDs	Change in HDs
Northwest	6.8%	13.82	6.3%	12.83	-0.992
Allegheny	9.6%	19.55	9.6%	19.52	-0.026
Southwest	9.9%	20.14	9.5%	19.35	-0.792
West Central	7.5%	15.26	7.2%	14.65	-0.609
East Central	13.7%	27.79	14.2%	28.86	1.066
Rural Northeast	5.3%	10.77	5.0%	10.18	-0.585
Urban Northeast	7.2%	14.68	7.1%	14.33	-0.357
Lehigh Valley/Berks	8.3%	16.92	8.6%	17.43	0.510
Collar	19.5%	39.68	20.1%	40.82	1.134
Philadelphia	12.0%	24.39	12.3%	25.04	0.651

The Impact of population shifts on Senate seats

The same pattern of regional change will, of course, be found with regard to the distribution of Senate seats. Again, five regions in western and northeastern PA will lose seats. Allegheny County should have the same number of seats, and four regions will gain seats. Once again, the regions gaining the largest number of seats are the collar counties and east central Pennsylvania, while the region with the largest loss is the northwest. The total shift will be almost one seat (.83 of a seat) from the regions losing seats in the Senate to those gaining seats.

With only 50 Senate seats, the fractional distribution in each case is far below one seat in each region. But given the distribution of gains and losses, it seems reasonable that the Lehigh Valley and Berks, collar counties, and Philadelphia regions would together gain about one seat. A seat shared between the west central and east central regions will have a larger east central component while, aside from Allegheny County, the other regions will see districts on their regional borders encompass a larger population than other regions.

Table 2

Region	2010 Share of Population	2010 SDs	2020 Share of Population	2020 SDs	Change in SDs
Northwest	6.8%	3.40	6.3%	3.16	-0.24
Allegheny	9.6%	4.82	9.6%	4.81	-0.01
Southwest	9.9%	4.96	9.5%	4.77	-0.19
West Central	7.5%	3.76	7.2%	3.61	-0.15
East Central	13.7%	6.84	14.2%	7.11	0.27
Rural Northeast	5.3%	2.65	5.0%	2.51	-0.14
Urban Northeast	7.2%	3.62	7.1%	3.53	-0.09
Lehigh Valley/Berks	8.3%	4.17	8.6%	4.29	0.12
Collar	19.5%	9.77	20.1%	10.05	0.28
Philadelphia	12.0%	6.01	12.3%	6.17	0.16

The political impact of demographic change

The demographic shift and associated changes in the distribution of House and Senate districts may not seem that dramatic. But they are not insignificant. The regions of the state losing seats in the House and Senate tend to be those in which, at least in the last decade, the Republican share of the vote has been increasing. The regions of the state gaining seats in the House and Senate are somewhat more likely to be those in which, at least in the last decade, the Democratic share of the vote has been increasing.

How demography affects the political balance in the state depends on whether districts are drawn with the aim of benefiting one party or not. We now turn to that question.

The Political History of Redistricting in Pennsylvania

Gerrymandering

We saw above that a state Supreme Court controlled by members of the Republican Party appointed the chair of the Legislative Reapportionment Commission in both 2000 and 2010. In both years, the lines established by the LRC benefited—or to use the common phrase—were *gerrymandered* in favor of the Republican Party.

In this section we give a brief introduction to the practice of gerrymandering for those who are unfamiliar with it.

Gerrymandering has a long history in the United States. Indeed, the name itself goes back to 1812 when Governor Elbridge Gerry of Massachusetts signed a bill that created a legislative district that benefited the Democratic-Republican Party over its Federalist Party opponents.

Gerrymandering draws district lines that enable one party to win a larger share of legislative races than its share of the overall population in the entire state (or country, when it comes to national elections). Gerrymandering is carried out through two processes, both of which focus on distributing voters who are known to support one or another of the political parties in ways that favor one party and disfavor the other.

The first is colloquially known as *packing*. Voters from the party disfavored by gerrymandering are packed into a limited number of districts. Those districts become safe for the disfavored party. But, by concentrating the disfavored party's voters in a limited number of safe districts, far more districts are created with strong majorities in support of the favored party.

The second process is known as *cracking*. In this case the disfavored party's voters are spread among so many different districts that all of these districts then have strong majorities for the favored party.

We can see both processes at work in the following example (figure 3):

Suppose there are 50 voters: 30 support the blue party and 20 support the red party. They have to be divided into five districts. The first redistricting plan creates five districts, each of which has ten voters that favor one of the parties. While none of those districts are competitive, the overall distribution of party members leads to three districts where blue party candidates are certain to win and two districts where red party members are certain to win, which matches the 60-40 split of voters.

The second redistricting plan gerrymanders the districts to benefit the blue party. It “cracks” the red party voters into five separate districts. Each of them has a majority of blue party voters and thus five blue party representatives are elected, overrepresenting the blue share of voters in the electorate.

The third redistricting plan gerrymanders the districts to benefit the red party. It “packs” many of the blue party voters into two districts in which that party has a majority. And then it cracks the other blue party voters so that they are a minority in the other three districts. By these means, three of the

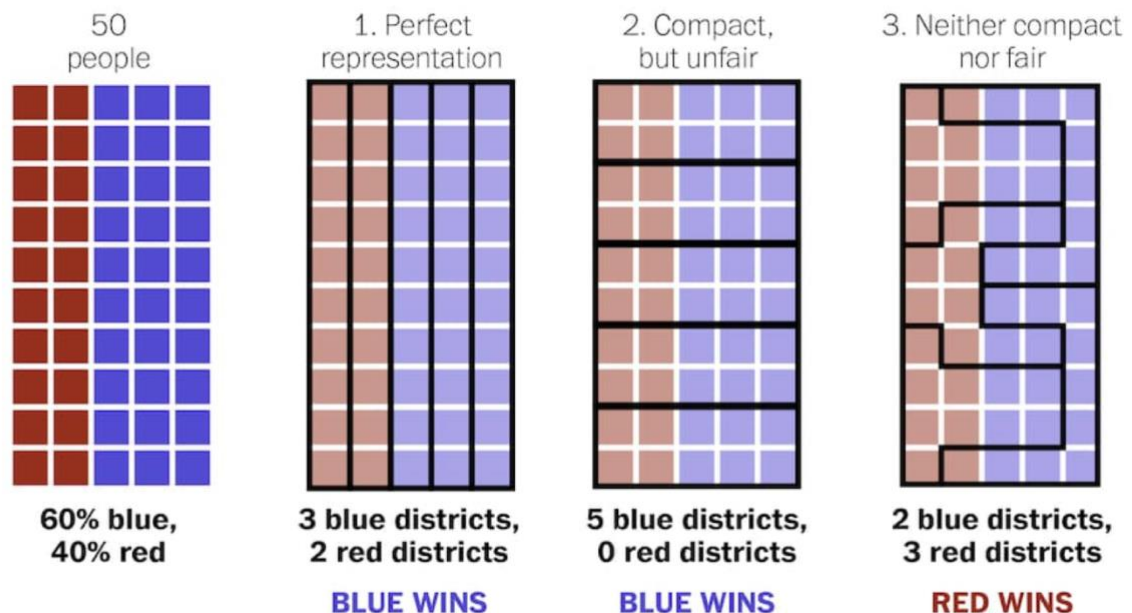
five districts (or 60%) are likely to elect a red party representative even though 60% of the voters support the blue party.

As [figure 3](#) points out, the third redistricting scheme has another problem—it creates districts that are not compact. Districts that are compact and contiguous are often thought to be important criteria for redistricting. They make it easier for voters to know the lines of the district in which they live and who their representatives are. That makes it easier for them to know who they need to talk to in trying to sway other voters. And it also makes it easier for them to share their ideas and needs with their legislators. To attain those two goals, however, it sometimes makes sense to create districts that are less compact so that local governments and public institutions—county and municipal governments and school districts—or local communities of interest, such as ethno-national or racial groups, are not split between representatives. Recognizing local governments and communities of interest in redistricting also helps voters with common interests or concerns work together with one another and know who their representative is.

One sign of severe gerrymandering is legislative districts that are very oddly shaped, that have weird protrusions and / or holes or that break apart local governments. It is important *not* to conflate fair districts with districts shaped as squares or rectangles. One of the criteria for fair legislative reapportionment is that district lines do not break apart local and county governments more than is necessary. Those governments don't form squares and rectangles largely because they were formed—in many cases, centuries ago—to follow significant geographic features such as rivers and mountain ranges, neither of which follow straight lines. It's also important for legislative districts to keep communities of interest together, which also tend not to manifest in simple geographic shapes. But large legislative districts that are in bits and pieces strewn together for no evident rhyme or reason indicate that gerrymandering is at work. The famous 7th congressional district in Pennsylvania under pre-reform maps—which was known as the "Donald Duck kicking Goofy" district is an example. But some departures from perfect squares and rectangles should not be taken to indicate that district lines have been drawn for some nefarious purpose, especially if we can find rational reasons for them rooted in county and local government lines.

Figure 3

Three different ways to divide 50 people into five districts



Measuring partisan gerrymandering

Gerrymandering, then, is the practice of drawing legislative district lines to enable one party to secure a higher share of legislative seats than its share of voters in the state or country as a whole. Given that this is the goal of redistricting, it is possible to create mathematical measures of the partisan bias of legislative district lines.

There are a number of ways to measure partisan gerrymandering. None of them are perfect so the best way to get a sense of how much legislative districts are gerrymandered is to look at the measures.

We will look at the 2002 and 2012 legislative lines in Pennsylvania applying three such measures.³

Efficiency Gap. In all elections, some votes don't determine the outcome. Votes for the losing candidate don't elect a candidate. And votes for the winning candidate in excess of "50% plus one" don't do so either. The efficiency gap measure of partisan bias labels both of these votes as "inefficient."⁴ Cracking and packing voters in legislative districts produces votes that are inefficient. Packing the voters of the favored party creates more inefficient votes because the favored party wins by higher margins than necessary, or more than 50% plus one. Cracking the voters of the disfavored party increases the number of voters who have no impact on the election because more of them are spread into districts that cannot be won by that party. The efficiency gap measure of partisan bias is calculated by subtracting one party's total inefficient votes in an election from that of the other party and then dividing by the total number of votes cast. The efficiency gap gives us a single number that measures the extent to which district lines are tilted in the direction of one party.

Partisan Bias. The partisan bias measure estimates the difference between the share of seats that each party would win in an election in which 50% of the voters voted for each party. If we estimate that a party would win 55% of the legislative seats if it received 50% of the statewide vote, then there is a partisan bias of 5%. To calculate partisan bias, the observed vote share in each district is increased or decreased by the amount necessary to simulate a tied, statewide election. So, for example, if the blue party won 48% of the vote, its vote share in each district is increased by an amount necessary to close the two-point, statewide gap. And then each party's seat share statewide is determined by looking at the results of this hypothetical tied election.

Mean-Median Difference. This measure is a party's median share of the vote minus its share of the vote across all districts.⁵ For example, if the median share of the blue party votes in all districts is 45% and its mean share of the vote in all districts is 50%, then the mean-median difference measure has a value of -5% and the party has a 5% disadvantage. As the voters of the party favored by gerrymandering are packed and the disfavored party's voters are cracked, the favored party will do better in more districts than it would in perfectly fair districts. And that in turn will lead the median share of the vote won by the favored party to be higher than it would be with perfectly fair districts. Because the mean share of the vote averages the party's share in all districts, packed as well as cracked, it will not change as much.

³ The mathematics of a fourth measure of gerrymandering, *declination*, is complicated, so we won't discuss it here.

⁴ The efficiency gap is explained in depth in Bernard Grofman and Gary King, *The Future of Partisan Symmetry as a Judicial Test for Partisan Gerrymandering after LULAC v. Perry*, *Election Law Journal*, Volume 6, November 1, 2007.

⁵ A good discussion of mean-median difference can be found in Michael D. McDonald and Robin E. Best, *Unfair Partisan Gerrymanders in Politics and Law: A Diagnostic Applied to Six Cases*, *Election Law Journal*, Volume 14, Number 4, 2015.

Partisan bias in the district lines from 2002 to 2020

It's well known that during this period Republicans were able to draw district lines that benefited their party in state legislative elections because they had a majority of seats on the Legislative Reapportionment Commission in 2002 and 2012. It is not as widely known, however, how successful they were in doing so.

The election experts at the Campaign Legal Center have calculated scores for the legislative district plans of almost all states, going back in many cases to the plans adopted in 1972. The striking results for the legislative district adopted by the LRC for House and Senate elections beginning in 2002 and 2012 are found in table 3.⁶

Table 3

Measures of Partisan Bias					
Republican Bias					
	Efficiency Gap	Partisan Bias %	Partisan Bias Seats	Mean-Median	Average shift in seats necessary to change party control in decade
Senate 2012-2020	+7.6%	+8.5%	4.25	+3%	4.8
House 2012-2020	+6.9%	+7.5%	15.23	+6%	13.5
Senate 2002-2010	+8.1%	+9.0%	4.5	+4.9%	4.6
House 2002-2010	+4.1%	+4.3%	8.73	+5%	4.7

The efficiency gap scores in the second column of table 3 show that Republicans wasted between 4.1% and 7.6% fewer votes in elections conducted under the legislative plans adopted in 2001 and 2011.

The partisan bias scores in the third column of table 3 show that in a hypothetical election in which each party won 50% of the statewide vote, the Republicans would win between 4.3% and 9% more seats. The data in the fourth column of table 3 give an estimate of how many more seats Republicans would win in a hypothetical House and Senate election in which each party won 50% of the vote. These numbers, 4.5 and 4.25 seats in the Senate under the 2002 and 2012 lines respectively, and 8.73 and 15.23 in the House under the 2002 and 2012 lines respectively, are substantial. This is even more clear when one keeps in mind that, as the last column shows, on average shift of only 4.7 seats would change control of the House in the elections held between 2002 and 2010; an average shift of only 13.5 seats would change control of the House in elections held between 2012 and 2020; an average shift of only 4.6 seats would change control of the Senate in elections held between 2002 and 2010; and an average shift of only 4.8 seats would change control of the Senate in elections held between 2012 and 2010.

The mean-median difference score shows that in the legislative districts drawn in 2002 and 2012, the median Republican vote share was between 3% and 6% higher than the party's mean vote share, again indicating a substantial Republican advantage.

To provide additional context for these scores, table 4 compares partisan gerrymandering in Pennsylvania with that in other states. Each cell in that table shows what percentage of state legislative

⁶ The data in tables 3 and 4 can be found on the PlanScore website. Accessed October 24, 2021, at <https://planscore.campaignlegal.org/pennsylvania>.

district plans adopted that year were less biased than the Pennsylvania plan under each measure. The redistricting plans adopted by the Legislative Reapportionment Commissions for 2002 and 2012 were more skewed than 46% to 96% of other state plans under the three measures. And leaving out the House redistricting plan of 2002, which was less partisan than the other three, Pennsylvania’s legislative district plans were more skewed than at least 67% of state legislative plans under the three measures.

Table 4

	Partisan Redistricting in PA and Other states		
	The PA Plan was more biased than this percentage of plans in 50 states on this measure		
	Efficiency Gap	Partisan Bias %	Mean-Median
Senate 2012	67%	79%	69%
House 2012	71%	76%	96%
Senate 2002	77%	83%	93%
House 2002	46%	47%	89%

What should we expect from fair legislative districts?

As we stated at the beginning of this paper, our goal is to have competitive, nonpartisan, and fair districts that do not benefit one party more than another. We believe that is the likely result of the current Legislative Reapportionment Commission’s work. But what will be the result if districts are drawn fairly, given the demographic changes in our state and the history of gerrymandering we have just canvassed?

The evidence suggests fair districts will, first, look very different than the district map we have today. Demographic changes alone will bring that about. While moving three or four House districts and one Senate district from one part of the state to another may not seem dramatic, it will require rethinking every district in every region of the state. In addition, districts that are no longer drawn to benefit the current legislative majority, as they have been for the last two decades, will also be dramatically different than those we see today. And legislative districts will look different, not just because they aren’t gerrymandered but because districts that are not gerrymandered can be drawn to respect county and municipal boundaries and communities of interest, as well as to end the historical unfairness to and underrepresentation of Black and brown communities.

In other words, we expect that fair legislative districts may well look as if they were drawn on a blank slate. That might be uncomfortable for incumbent legislators. But we believe that districts that respond to the demographic changes of the last decades and undo the Republican gerrymander during this period may end up requiring many incumbent legislators get to know new constituents.

Second, we expect that fair districts will no longer disproportionately benefit the Republican Party in legislative elections, compared to the current mapping. Instead, districts will fairly represent the political makeup of the state. This should make the political system more responsive to changes in the political sentiments and choices of voters.

We expect new legislative districts to be drawn in ways that favor neither party. However, once demographic changes are taken into account, the heavy hand of Republican gerrymandering is

removed from the scales, and neutral and fair principles are used to draw district lines, the inevitable result will be that the Republican bias found in current districts is removed.⁷

We repeat: it is not what we hope for or expect. We believe that under Mark Nordenberg's chairmanship, the Legislative Reapportionment Commission is about to give us fair, nonpartisan districts that consider county and local government lines and communities of interest, thereby fairly reflecting the various political tendencies within the state.

⁷ Districts that are no longer drawn to benefit Republicans will, of course, appear to be more beneficial to Democrats than current districts. But we do not expect or hope that this will be a result of an intentional decision on the part of the LRC to benefit one party or another. Rather it will be the natural result of demographic change and undoing the Republican gerrymander of the past two decades. Moreover, it's not even clear that doing that will benefit Democrats that much. It is well known that the Democratic Party is at something of a disadvantage in legislative redistricting nationally because Democratic voters tend to live among other Democratic voters, a bit more so than Republicans do. To use the gerrymandering jargon, they tend to pack themselves into urban and suburban geographies. The result is that even an effort to deliberately draw lines to benefit Democrats would be limited by the geographic distribution of members of the two parties.