

A Review of Various Election Methods

Updated February 2020

PREFACE

A major focus of the League of Women Voters of Washington is the continuing health of our democracy, including elections at all levels of government. Our work is based on discussion and consensus, coming to specific positions. On the issue of election methods, our applicable positions include:

- Support of state election laws allowing for more options for alternative election methods in governmental jurisdictions at both the state and local levels;
- Support of adoption of election methods that produce proportional representation when electing representative government bodies such as councils, legislatures and Congress.

At the turn of the 21st century, the League examined major alternatives of election methods used in western democracies and came to the above positions, which continue to address election methods well. That was nearly 20 years ago so the focus of this report is research and a report to bring up to date the information on election methods in use or under consideration for use in various places in 2020. Our goal, as always, is continuing education of League members, our elected officials and the public.

The Research Committee:

Betty Barats, LWV Bellingham/Whatcom County
Prakash Buhta, Spokane
Stoney Bird, LWV Bellingham/Whatcom County
Barbra Chevalier, LWV Seattle/King County
Nancy Dahl, LWV Tacoma/Pierce County
Becky Flarity, LWV Tacoma/Pierce County
Linnea Hirst, co-chair, LWV Seattle/King County
Christy Krashan, LWV Seattle/King County
Cindy Madigan, co chair, LWV Bellingham/Whatcom County
Pam Somers, LWV Snohomish County
Ned Witting, LWV Tacoma/Pierce County

The Writing Committee:

Chief: Stoney Bird,
Assistants: Linnea Hirst
Cindy Madigan

The Reading Committee: (who edit for characteristics such as neutrality, thoroughness, readability)

Lucy Copass, LWV Clallam County
Lucy Steers, LWV Seattle/King County

Technical Review:

Lisa Ayrault, FairVote Washington, for ranked-choice voting, both single- and multi-winner
Aaron Hamlin, The Center for Election Science, for approval, range/score voting
Sara Wolk, Equal Vote Coalition, for STAR voting
Jameson Quinn, PhD candidate in Statistics, Harvard College, for STAR voting

Introduction

How should we choose our representatives?

In a representative democracy, citizens govern themselves through their elected representatives—a few are elected to make decisions for many. The tradition of democratic and republican institutions in western civilization dates back 2600 years, starting in city states such as Athens and Rome. Over time, people have tried many different ways of choosing those representatives. The question for today is whether we in Washington have the most effective way of choosing, and whether our laws should make it easier for governmental jurisdictions to experiment with other voting methods.

There are many ways to choose a representative. An election method or system (see adjacent box) defines the rules by which the choices or preferences of voters are collected, tallied, aggregated, and interpreted to obtain the results of an election. One such method, plurality voting, is the oldest of the modern age and is used in one-fourth of the countries of the world, including the United States, where it is used almost universally.

Yet, there are indicators that something is amiss with elections in the United States, and the public is becoming increasingly aware of our system's failings:

- Our country has one of the lowest rates of voter participation in the democratic world, there are numerous complaints about lack of choice among candidates and parties, and there is considerable distortion between votes cast and seats gained, often due to gerrymandering.
- Our election method draws legislative district boundaries that tend to reinforce a two-party system, and a disproportionately low percentage of women, minorities, and ethnic groups are elected to office.
- Small changes in the popular vote can produce huge swings in party representation.
- In Washington, if you vote with the majority in your district, you have representatives in Olympia who share your political views; otherwise you have none.

Most of the democratic world, however, uses other systems, and increasingly alternatives are under consideration in various parts of the United States, including in Washington, as preferable from numerous points of view.

The purpose of this report is to present in detail a number of voting methods in use or under consideration for use to help ensure that our elected officials better reflect their constituents' wishes and interests and, in the process, discourage gerrymandering.

This report also discusses gerrymandering, summarizes the laws that affect Washington's voting methods, provides a note on voting equipment required. In the appendix, besides a glossary and lists of resources, we include a description of the relationships between various voting methods and an example of criteria used in evaluating election systems.

Some commentators define an "election method" narrowly as a way of voting and counting the results. They define an "election system" more broadly to include how voters are registered and who may be registered, and often include standards for voting and tabulating equipment. Because many commentators use "election methods" and "election systems" interchangeably, this report will do so as well.

The Election Methods

Single-Winner Election Methods

- In these systems there is a single winner to represent a district or to fill a single position representing the district.
- They are often characterized as elections with single-member districts.
- These are all non-proportional. That is, the percentage of seats held by a political perspective or party in a legislative body may have no relationship to their percentage of the popular vote.

Single-winner voting systems include plurality, approval, score or range, and single-winner ranked choice (instant runoff) voting methods.

Plurality Voting

General Description

- Plurality voting is the prevailing method in the United States. It is a single-winner system, with representatives from single-member districts or single positions within a district. Election results are non-proportional.
- It is also known as first-past-the-post or winner-take-all

How It Works

- Each voter has a single vote.
- Here is a sample plurality election ballot filled out:

You have one vote	
Write an X beside the candidate that you prefer.	
RASPBERRY	
PEACH	
BLUEBERRY	X
ORANGE	

- The candidate with the most votes wins (with a plurality, not necessarily a majority).

- A common variation requires that the winner have a majority. To achieve this, a separate runoff election must be held between the top two candidates if neither had a majority in the initial election.
- Note: In Washington, in effect, the initial election is the top-two primary, the ‘runoff’ is the general election.

Where Used and For How Long

The plurality voting method is the second most frequently used form of election for national legislatures after the various forms of proportional representation.

It has been in use in the United States for electing members of the House of Representatives since the country’s formation. The Constitution (Art. I, Sec. 4) allows the state legislatures to set the “time, place, and manner” of the elections to the House and the Senate, unless Congress intervenes. Over the years, many states used this power to elect all or part of their congressional delegations at large. Since 1967, federal law has required that members of the House be elected from single-member districts.

With few exceptions, elections at all levels in Washington state, whether statewide, by district, by position, or at large, are plurality elections.

In England the plurality voting system was used to elect the House of Commons from 1295 to 1801, and the method has continued to the present as the House of Commons governs Great Britain. India adopted this method in 1952 for their lower house, and Kenya in 1992 for the lower house of their parliament.

Strengths

- Plurality voting is easily understood by the populace, and accepted because familiar.
- Like the other methods, it is easily adapted for machine counting.
- Depending on the ballot design, it can be error proof.
- It works well when there are only two parties or only two candidates to choose from. In such a scenario, the winner will necessarily receive more than 50 percent of the votes cast.
- Unlike some methods, approving a candidate cannot hurt that candidate’s chances, and not voting for a candidate will not fail to hurt that candidate’s chances.

Weaknesses

- When there are more than two candidates, the winner may not receive a majority of the votes and thus not be a true representative of their constituency.
- In Washington it is common for several members of a city council or county council to be elected at once and to be elected citywide or countywide. In such a system, voters from the majority perspective can succeed in electing all the members up for consideration, leaving a

significant minority of voters without representation. In an extreme case, 51% of the voters could obtain 100% of the representation. For the excluded 49% of voters the experience can reduce faith in the voting method.

- When there are more than two candidates, voters may be drawn to vote “strategically”. Their vote will then not reflect their true views on which candidate would best represent their views.
- Like other single-winner methods, the system is vulnerable to partisan gerrymandering.
- Since the drawing of the lines around a single-member electoral district inherently encloses a certain composition of voters, the creation of single-member districts for plurality elections inevitably influences election results even without partisan intervention – just as it does for other methods that elect one member per district.
- A slight change in voters’ views (for example, from 49% to 51%) may produce a reversal in which party has power and a reversal in policy. Conversely a large change in voters’ preferences (for example, from 20% to 40%) can result in no change in representation or policy.
- Because of the top-two primary, these weaknesses do not appear in the general elections in Washington state, but do come into play in the primaries.

Conflicting Opinions and Two-Edged Swords

- The plurality method tends to exaggerate legislative majorities for the winning party. For example, during the Thatcher years in England, the Conservatives commonly obtained 40% of the popular vote while gaining 60% of the seats in Parliament. Some commentators view this tendency as an advantage, since it means the legislature will be capable of decisive action. Others question the desirability of this tendency on at least two grounds:
 - It means that the legislature does not reflect the strength of the various political views in the electorate in proportion to their prevalence, and is to that extent unrepresentative. Its “decisive action” may run roughshod over the desires and interests of a majority of the voters.
 - It also means that a slight change in voters’ preferences (and a change in which party has the majority) can produce marked changes in policy from one election to the next.

Approval Voting

General Description

- Approval voting is non-ranking and non-proportional (although some scholars have devised a way to obtain proportional representation among multiple winners).
- It is most commonly used in single-winner elections.

How It Works

- Voters may vote for (“approve”) as many candidates as they wish. The method does not allow for distinguishing among the candidates approved.
- Here is a approval election sample ballot filled out:

You have four votes	
Write an X beside each candidate that you favor.	
RASPBERRY	
PEACH	X
BLUEBERRY	X
ORANGE	

- The candidate with the most approvals wins.

Where used and for how long

Approval voting was used for centuries to elect the Catholic pope (1294 to 1621), and was used in many USSR and Eastern European elections. It was used to elect the first four presidents of the United States, and was used in Greece during the 19th and early 20th centuries.

In recent years, approval voting has been used for internal political party elections in some states and used to make ballot question decisions in some countries. In 1990, Oregon successfully used approval voting in a statewide advisory referendum on school financing, which presented voters with five different options and allowed them to vote for as many as they approved of.

Other than that, no governments have used approval voting for elections as of 2019. In 2018, the voters of Fargo, North Dakota, voted to use approval voting in elections of city officials beginning in 2020.

Currently, approval voting is used to elect the United Nation secretary-general, and is used by various scientific and engineering societies and by some other smaller groups.

Strengths

- Approval voting is simple for the voter to understand.
- The ballot is simple to design, to implement and to audit.
- The method may give otherwise invisible candidates more accurate and clear reflection of support.
- Unlike some methods, approving a candidate cannot hurt that candidate’s chances, and not

voting for a candidate will not fail to hurt that candidate's chances.

- Approval voting minimizes a decrease in voter satisfaction in unusual electoral situations when minor anomalies do occur.

Weaknesses

- If used in its single-winner form, approval voting will be vulnerable to gerrymandering.
- It's possible that two or more candidates will receive more than 50% of the vote or that no one will receive as much as 50%.
- There is no way to indicate the voter's favorite when the voter votes for more than one candidate.
- Approval voting strongly favors candidates who are perceived as most electable, basically allowing the media to sway who can win, as can happen in plurality voting.

Conflicting opinions and two-edged swords

- Some commentators emphasize that it opens the way for minority candidates and third parties. Others assert that it favors centrist, consensus candidates and discourages third parties.
- Some commentators point out that voters can express their sincere views in this method. Others show that if voters do vote sincerely, they will be vulnerable to vote-splitting and the spoiler effect. These commentators note further that to avoid vote-splitting, voters may organize for bullet-voting (voting only for one candidate) a form of strategic voting.

Score or Range Voting

General Description

- Score voting is a single-winner method that is non-ranking and non-proportional.

How They Work

- In **score voting** voters rate candidates on a scale (typically 0-5 or 0-10). Voters may give the same rating to more than one candidate.

- Here is a sample score voting ballot filled out:

Opposite each candidate write an X to score that candidate from 0 (Don't Support) to 5 (Strongly Support)						
You may give two or more candidates the same score. Leaving a candidate's line blank will count as a score of 0. Scores will be added together and the candidate with the most total points will be the winner.						
	DON'T SUPPORT					STRONGLY SUPPORT
	0	1	2	3	4	5
Raspberry					X	
Peach						X
Blueberry					X	
Orange	X					

- Depending on the specifics of a given method, the scores are added up or averaged, and the candidate with the highest total or average score wins. The ballot above uses the highest total score method.
- Range voting** is similar, except the voter may assign any number, including fractions or decimals, to a candidate, as long as it is within the stated range, for example, voting 2 1/2 or 2.5 for one of the candidates on a 0 - 5 scale.
- Here is a sample range voting ballot filled out:

Write in a score for each candidate that you support within the range of 0 (Don't Support) to 5 (Strongly Support)	
You may give two or more candidates the same score. You may write in fractional or decimal scores (for example, 2 ½ or 3.7). Leaving a candidate's line blank will count as a score of 0. Scores will be added together and the candidate with the most total points will be the winner.	
Raspberry	0
Peach	3.5
Blueberry	2
Orange	5

Where Used and for How Long

Range voting is used in many organizations, as well as for entertainment and sports competitions, such as by ESPN for NBA player rankings, by The Voice TV show for winners, and by Olympic judges.

Strengths

- Either of these methods may encourage more parties to run candidates.
- They may produce a more accurate measure of support for the voters' various political perspectives.
- They promote citizen participation - some studies of voting methods show score voting elects candidates with the highest societal intensity of happiness and with the least societal regret.
- Both methods are easy to understand.
- They minimize wasted votes.
- Either could make a primary election unnecessary.

Weaknesses

- Neither score nor range voting necessarily ensures majority support.
- Both methods are vulnerable to defensive voting.
- Both methods are vulnerable to gerrymandering.
- Neither method has been used in political elections to date.
- Giving a positive rating to a less preferred candidate can cause a more preferred candidate to lose.

Conflicting Opinions and Two-Edged Swords

None noted.

Single-Winner Ranked-Choice Voting

General Description

- Ranked-choice voting can be used for either single-winner or multiple-winner elections. Its use for multiple-winner elections is described in the Multiple Winner Methods section of this report, which follows.
- When used in a single-winner election, synonyms include instant runoff voting (IRV), alternative voting, and majority preference voting.

How It Works

- Voters can rank as many or as few candidates as they want, in order of preference.
- Here is a sample ranked-choice voting ballot filled out:

Rank your candidates in order of preference				
Mark one choice per candidate Mark one choice per column	1 st Choice	2 nd Choice	3 rd Choice	4 th Choice
Raspberry		X		
Peach	X			
Blueberry			X	
Orange				

- First, all the first-choice votes are counted. If there is a majority winner that candidate is declared the winner.
- If there is no one who receives a majority, the candidate with the fewest first-choice votes is eliminated. The ballots that gave that losing candidate their first choice vote are transferred to the ballot's second choice, and the votes are counted again. If someone now has a majority that person is elected. This process of tallying, eliminating the last-place candidate, transferring votes as the ballots specify and re-tallying continues until one candidate receives a majority.

Where Used and For How Long

Ranked-choice voting (RCV), also known as instant runoff voting (IRV), is currently used in about twelve U.S. cities and the state of Maine, as well as in many national, state and local elections around the world. It has been used in Australia since 1918, and Ireland since 1921.

In the United States, Maine is the first state to use RCV for U.S. House and Senate primary and general elections, statewide and state assembly primaries, as of the 2018 election. Six states—Alaska, Nevada, Hawaii, Kansas, Iowa, and Wyoming—will use RCV for all or part of their Democratic presidential primaries in 2020.

The method is currently used in these twelve cities: Berkeley, Oakland, San Francisco, and San Leandro in California; Telluride, Colorado; Portland, Maine; Takoma Park, Maryland; Minneapolis, St. Louis Park, and St. Paul, Minnesota; Santa Fe and Las Cruces, New Mexico. Eleven additional cities, including New York City, plus Benton County, Oregon, are planning to use it in future elections.

Voters in Pierce County, Washington, approved a charter amendment to use RCV in 2006 and used it in the 2008 election. The voters of the county repealed its usage in 2009 due to a number of special factors, including having adopted the system when infrastructure was far more costly than it is now; the state's adoption of the top-two primary system, negating the need for RCV in the minds of many voters; and political unity between both establishment parties against the new method. There was also an unfortunate winner in one of the elections whose election stigmatized IRV for many members of the public, even though he had polled first in every round of counting, and so would have been the winner even in the absence of IRV.

Strengths

- Negative campaigning is inherently discouraged since candidates risk alienating voters who might give them second-choice votes
- Ranked-choice voting defeats the spoiler effect and makes it possible for voters to rank their choices honestly.
- Ranking more than one candidate won't hurt the chances of your most favored candidate; second choices are not even examined unless the top choice can't win.
- Third-party and independent candidates can viably run for office without concern for being the spoiler.
- Experience shows that where RCV has been adopted, more non-traditional candidates including women and people of color run and win elections
- Elections have the potential for cost savings because primaries may be eliminated. The savings would accrue both to the candidates (not having to campaign for both the primary and the general election) and to the taxpayers.
- The method promotes representative government through increased voter turnout. RCV increases voter participation when combining the primary and the general election into one single election where turnout is the greatest and most diverse.

Weaknesses

- As with all single-winner methods, single-winner ranked-choice elections are vulnerable to gerrymandering.

Conflicting Opinions and Two-Edged Swords

- A greater diversity of candidates is likely to run – and to win. Some view this feature as a justified expression of democracy while others consider it a negative outcome.
- With more choices on the ballot, voters will need to do more research on the qualifications of more candidates. This is viewed by some as an extra burden on voters, and others as empowering voters with more choice and opportunity to get educated on a host of candidates. It is, in any event, already necessary for voters in a primary.
- Candidates will need to expand their campaign efforts to reach out to more voters to vie for their opponents' second and third choice votes. This may result in increased campaign

costs. On the positive side, candidates report they liked the shift to RCV as it resulted in more civil campaigns and gave them opportunity to get to know more voters.

- Some say that the time necessary to tabulate multiple rounds of counting may result in the need to wait longer for final election results, but others point out that with current election equipment, the computer's tabulation work is virtually instantaneous whatever voting method is being used. Any delays in reporting results arise because mail-in ballots don't all arrive for counting until days or even weeks after "election day."

+++++

Multiple-Winner Methods

- Multiple -winner voting methods include party list, ranked-choice voting with multiple winners, and cumulative voting.
- In each of these methods there are multiple winners, all selected in a single general election.
- Winners may be elected from a single district or from the state as a whole.
- Multiple-winner methods are all proportional or semi-proportional and to that extent make both the spoiler effect and gerrymandering impossible.

Party List Voting Methods

General Description

- The party list voting methods allocate seats proportionally among parties.
- The party lists are either closed or open.
- The elections are non-ranking and elect representatives from multi-member districts.

How They Work

- In a **closed list election**, voters vote only for a party. Candidates for the legislature are listed on the ballot under the name of the party or published separately.
- Here is a sample closed list ballot filled out:

You have one vote.								
Mark X in the box below the party that you prefer.								
A party's seats in the legislature will be allocated in proportion to the votes that the party receives.								
Citrus Party			Tropical Party			Temperate Party		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mr. Orange			Ms. Papaya			Ms. Apple		
Ms. Lemon			Ms. Mango			Mr. Pear		
Ms. Grapefruit			Mr. Passionfruit			Ms. Peach		

- A party's share of the total vote determines the number of seats that the party will hold in the legislature. The actual representatives are automatically selected by going down the list on the ballot in order until that number of candidates is reached. For example, if the

Tropical Party is allowed 2 seats, Ms. Papaya and Ms. Mango would automatically be selected.

- In an **open list election**, the voters have a certain degree of control over the order of candidates in the party list. Voters vote both for a candidate and for a party. Their vote for a candidate tends to move the candidate higher on the list of candidates for that party.
- Here is a sample open list ballot filled out:

You have one vote.

Your vote will count for both a candidate and a party.
Mark X in the box beside the candidate that you prefer.

Your vote for the candidate will help to make it
more likely that the candidate will serve.

•

A party's seats in the legislature will be allocated
in proportion to the votes that the party receives.

Citrus Party		Tropical Party		Temperate Party	
Mr. Orange		Ms. Papaya		Ms. Apple	
Ms. Lemon		Ms. Mango	X	Mr. Pear	
Ms. Grapefruit		Mr. Passionfruit		Ms. Peach	

- As in a closed list election, the party vote determines the number of legislative seats that the party will control. The candidate vote helps to determine where a candidate appears in the party list.
- Candidates who receive more candidate votes appear higher on the list. Then, as in a closed list election, the members who will actually serve are found by going down the list, now revised, for as many seats as the party is entitled to.
- In either method there is typically a percentage-of-turnout threshold that a party has to reach in order to receive any seats.

Where Used and for How Long

Party list voting systems are the most frequently used systems in the world. About a third of the world's countries use one form or another of party list methods for electing the national legislature. Belgium adopted party list voting in 1899, the first country to do so.

Strengths

- Representation in the legislature is proportional to the political perspectives of the voters.

- Because the system is used in multiple-member districts, gerrymandering is impossible.
- Campaigns are more likely to be about issues than about personalities.
- The issues that a party campaigns on are more likely to be the ones that they act on if elected.

Weaknesses

- The spoiler effect operates between parties. For example, a voter might be most sympathetic with party X, but instead vote for party Y, believing that party Y will be more likely to obtain a position of power in the legislature.

Conflicting Opinions and Two-Edged Swords

- To proceed with legislative action, parties often need to form coalitions. Some view this as leading to instability, and cite the example of Italy. Others say that in most of the countries where party list voting prevails there is no more instability than in countries that use other systems. In some cases there is greater stability because the complex of forces in the coalition actually represents the complex of views in the public. Examples are Holland and the Scandinavian countries.
- Party list elections give the political parties commanding roles in determining who the candidates are and ultimately who the members of the legislature are, especially in closed list systems. Some view this feature as providing clarity about the policies that those ultimately elected will follow, and accountability to the party platform. Others would prefer that the voters have greater control.

Ranked-Choice Voting with Multiple Winners

General Description

- Ranked-choice voting with multiple winners is a ranking, proportional and multi-winner system, suitable for elections to any elected body (for example, a legislature, county council, or city council).
- Synonyms include single transferable vote (STV) and proportional representation (PR).

How It Works

- Voters vote for as many candidates as they favor and they rank their choices in order of preference.

- Here is a sample ballot for a ranked-choice election with multiple winners, filled out:

<p>To vote, put an X opposite any candidate that you favor.</p> <p>Put the X in the first column for your favorite candidate. Put it in the second column for your next favorite candidate, and so forth.</p>				
1 choice per candidate 1 choice per column	1 st Choice	2 nd Choice	3 rd Choice	4 th Choice
Ms. Raspberry		X		
Ms. Peach	X			
Mr. Blueberry			X	
Mr. Orange				
<p>Ranking more than one candidate won't hurt the chances of your most favored candidate.</p>				

- The threshold for winning an election is determined based on turnout and the number of members being elected from the district. A threshold which produces the greatest proportionality in the result is the turnout divided by one more than the number of members being elected, plus one more vote. If, for example, five legislators were being elected from the district, the threshold would be one-sixth of the turnout plus one more vote. Therefore, in an election with 1200 voters, any candidate wins when they receive 201 votes. Any additional votes for that candidate (the surplus) would go proportionately to the voters' second choices.
- The vote counting proceeds by rounds, with votes for last-place candidates and surplus votes for winning candidates in each round being reallocated to the voters' next choices. This continues until all seats are filled.

Where used and for how long

Multi-winner ranked-choice elections, also known as single transferable vote elections, have been used in several countries including India, Nepal, and Pakistan to select their national senates, in Ireland since 1919, in Australia for senate and state level elections, in Malta, New Zealand since 1992, and in Scotland for local council elections since 2007. In the United States, Cambridge, Massachusetts has used it since the 1940s for the nine-seat city council and six-seat school board elected citywide, and Minneapolis uses it for some elections. Most recently, Eastpointe, Michigan used it to resolve a federal Voting Rights Act lawsuit for two city council seats (at-large, proportional) in November 2019. Its use is also popular among organizations, corporations, and universities.

Strengths

- Campaigns are more civil, as candidates tend not to attack their opponents for fear of turning away the second- or third-choice votes of people who vote for their opponents.
- There is no spoiler effect. That is, you can vote for the candidate that you favor without fear that your vote will throw the election to someone that you really don't like.
- With multi-member elections and proportional representation (PR), parties are represented in proportion to the votes they receive.
- Commentators have said that with at least five members in a district, gerrymandering is effectively impossible.
- The ranking that voters are called on to do is intuitive and reflects choice-making in daily life.
- Ranked choice voting tends to increase voter participation.
- It increases representation for women and for racial, ethnic, and political minorities.

Weaknesses

See the next section.

Conflicting Opinions and Two-Edged Swords

- Some complain that the method will lead to the election of candidates who are not members of the two establishment parties, and will in that sense be “fringe” candidates. Others find this tendency to be a benefit, since the legislature will more accurately reflect the range of views in the electorate.
Some complain that the vote-counting system is too hard for voters to understand. Others note that voters need not understand counting systems in detail in order to vote and that the voters' role in ranking choices on the ballot is easy and intuitive

Cumulative and Limited Voting

General Description

- Both cumulative voting and limited voting are non-ranking and potentially proportional.
- They are most often used in multiple-winner elections (multi-member districts).

How They Work

- In **cumulative voting**, voters may cast as many votes as there are seats to fill.
- The voter may distribute those votes among the candidates in any way the voter chooses, including giving multiple votes to a single candidate, or splitting the votes among several candidates.

- Here is a sample cumulative voting ballot filled out:

You have four votes	
Mark X beside any candidate that you support. You may place more than one X beside a candidate.	
RASPBERRY	
PEACH	X X X
BLUEBERRY	X
ORANGE	

- The candidates with the most votes win.
- **Limited voting** differs from cumulative voting only in that voters have fewer votes than there are seats to fill. The proportionality of limited voting is correspondingly weaker.
- Here is a sample limited voting ballot filled out:

You have two votes	
Mark X beside any candidate that you support, but not more than two X's in total. You may place more than one X beside a candidate.	
RASPBERRY	
PEACH	X X
BLUEBERRY	
ORANGE	

Where, when, how long used

The system is used in a variety of local governmental units, e.g. cities, counties, school boards. It is also used widely in electing corporate boards of directors and in homeowner associations and other non-governmental units.

It was used for over 100 years to elect members of the Illinois House of Representatives. When it was adopted in the mid-nineteenth century, a majority of voters in Chicago were Republicans, while a majority of voters in the rest of the state were Democrats, reflecting the Civil War regional division of parties. With each district having three representatives, cumulative voting enabled Democrats in Chicago and Republicans in the rest of the state to obtain representation. However, the two parties would often collaborate to place, for example, two Republicans and one Democrat

on the ballot in a Republican district, guaranteeing the election of all three, and shoehorning the voters into the parties' choices. This meant that the parties acting together controlled representation instead of allowing the voters to pick representatives that the voters might have chosen for themselves.

Strengths

- The cumulative and limited voting methods can defeat gerrymandering if the voters organize to do so. For example, if a district has been set up to favor the party of candidate Z so that voters favoring candidate Y are in a minority, they may nevertheless succeed in electing candidate Y if they each put all their votes behind candidate Y. Their success depends on the voters for candidate Z not being organized and splitting their votes between Z and a third candidate. If the voters favoring candidate Z do organize, and put all their votes behind Z the effort at gerrymandering will succeed.
- Like the other multi-winner methods, cumulative and limited voting are helpful when an area has a large number of minority voters scattered throughout the community so that it is difficult to draw district lines that would include a decisive number of them.
- Both cumulative and limited voting methods allow voters to vote for more than one candidate without having to decide which they prefer.

Weaknesses

- Voting results are only roughly proportional.
- Both methods may encourage negative campaigning and extremist ideological candidates and parties.
- Minority voters need to be organized and not split their votes in order to achieve representation.
- Parties and candidates may have conflicting strategies. The parties want as many of their candidates as possible to win while a given candidate will want as many votes as possible for him or herself.

Conflicting Opinions and Two-Edged Swords

- Some argue that allowing voters more than one vote violates the 'one person, one vote' principle, thought to be fundamental to our democracy. Others observe that the essentials of the principle are preserved since every voter has the same quantity of voting power.
- Some suggest that allowing more than one vote per voter is confusing to the voters. Others observe that where the system is in use, voters have managed well.
- Multiple-member districts are by necessity larger areas with weaker geographical links between representatives and their constituents. There may, however, be stronger links of other kinds (political perspective, race and gender, for example).

- Because districts are potentially larger both in territory and population, some worry that campaign costs will be higher. Others note that there may be pre-existing links with more voters based on gender, race or political perspective.

+++++

Hybrid Systems

STAR (Score, Then Automatic Runoff) Voting

General Description

- STAR stands for “Score, Then Automatic Runoff”.
- STAR produces a single winner in single-member districts or single positions within a district.
- As will be explained below, STAR can also be used in multi-member districts. It can produce some level of proportionality in multiple winner elections through a variety of methods that include multi-winner bloc voting and elections with multiple runoffs.

How It Works

- In either single- or multi-winner districts, voters score candidates on a scale of 0 to 5, just as in score voting, and are allowed to give any score to any or all of the candidates.
- Here is a sample STAR ballot filled out:

Opposite each candidate write an X to score that candidate from 0 (Don't Support) to 5 (Strongly Support)						
You may give two or more candidates the same score. Leaving a candidate's line blank will count as a score of 0. Scores will be added together and the candidate with the most total points will be the winner.						
	DON'T SUPPORT					STRONGLY SUPPORT
	0	1	2	3	4	5
Raspberry					X	
Peach						X
Blueberry				X		
Orange	X					

- In the first round of counting, all the scores for a given candidate are totaled.
- In a **single-winner STAR election**, there would follow an automatic and instant runoff between the two highest scoring candidates. In the runoff, each voter's full vote is given to the runoff candidate that the voter rated higher. The winner is the candidate who has received the most runoff votes.

In the ballot example above, if Raspberry and Blueberry were the two highest scoring candidates after counting all ballots, this voter's ballot would go into Raspberry's count.

- For **multi-member district elections**, experts continue to study ways to achieve a level of proportionality in a STAR election. **STAR with bloc voting** and **proportional STAR voting** are two of the methods under consideration. As in a single-winner STAR election, voters only fill out a ballot once. The difference is in how the ballots are tabulated.
- In a **STAR election with bloc voting**, the two highest scoring candidates advance to an automatic runoff, just as in the single-winner method. Theorists suggest the following for what would happen next:
 - The finalist who was scored higher by more voters wins the first seat.
 - There is then a runoff between the next two highest scoring candidates. This process continues until all positions are filled.
- For **proportional STAR voting**, academic experts are attempting to work out how this could be achieved.

Where Used and For How Long

STAR voting was first conceived in 2014. As of 2019, the STAR voting system has only been used in non-governmental settings, e.g. in Dartmouth alumni officer elections and University of Colorado student body officer elections, in experimental elections (Portland Forward), and in computer simulations. The multi-winner bloc STAR voting will be used by the Democratic Party of Oregon for choosing delegates to their national convention, and by one Oregon county for their internal elections.

Strengths

- Like score, range and ranked-choice voting STAR voting allows voters to express nuanced support for candidates.
- Like these other systems again, it maximizes the number of voters whose preferences will be factored into the election.
- Proponents claim that the candidate with the most consensus support tends to win.
- The method may increase honest voting by reducing incentives for voters to cast ballots strategically or insincerely.
- It can eliminate the cost of primaries for both governments and candidates.
- It encourages positive campaigning since candidates are scored on their own merits.
- It allows an opportunity for third party candidates to be competitive.

Weaknesses

- Having been developed only in 2014, STAR voting has not yet been tested in any political elections.
- It does not satisfy the strict majority criterion: the candidate that the most voters would prefer may not have made it past the top-two primary.
- In its single-winner version, it is vulnerable to gerrymandering.

- In its bloc voting version, it is designed to elect majority-preferred candidates.

Conflicting Opinions and Two-Edged Swords

- STAR voting doesn't always pass the later-no-harm criterion, meaning that in a STAR election a voter may hurt the chances of the voter's favorite by showing support for others. Some commentators view this as a failing. Proponents say that the failure of this criterion is counterbalanced by the tendency to elect compromise centrist candidates and is required in order to mitigate strategic voting incentives.

+++++

Mixed-Member Proportional Voting (MMP) and Parallel Voting

General Description

- Both mixed-member proportional (MMP) voting and parallel voting systems are an amalgam of single-winner voting in districts and proportional representation encompassing larger districts, for example, a whole state.
- Synonyms for parallel voting are the supplementary system and the mixed member majoritarian system.
- Both MMP and parallel systems are used for multi-winner elections to a body such as a legislature or county council.

How They Work

- The district election in either method can in principle be any form of single-winner election, for example, plurality or ranked-choice. In practice the district elections are all plurality elections wherever MMP or parallel elections are practiced.
- The proportional representation election may be any form of proportional representation election, but is usually a party list vote.
- In either method, the voter is given two votes – one for a representative and one for the voter's party of choice.

- Here is a sample mixed-member proportional ballot filled out:

You have 2 votes			
One vote on this side for your district representative		One vote on this side for a party, in order to allocate <u>all</u> the seats in the legislature in proportion to party votes	
First vote		Second vote	
Richard Smith, Lemon Party			Lemon Party
David Green, Raspberry Party			Raspberry Party
Olive Worden, Orange Party	x	x	Orange Party
Rachel Ostrovski, Apple Party			Apple Party

- In **MMP elections**, the result on the party side of the ballot determines at least at first the number of seats that the party will have in the legislature. These seats are filled first with party candidates who have won district races. If there are additional seats to be filled they are filled with candidates named on the party list. If on the district representative side of the ballot, a party wins more seats than it would be entitled to from its proportion of party list votes, “overhang seats” can occur. Depending on the specific implementation, the party may fill the overhang seats. For example, if a party is entitled to four seats because of the results on the party side of the ballot but five members of that party have been elected on the district side, the party would be allowed to seat the fifth “overhang” candidate. The seating of overhang candidates actually increases the total number of seats in the legislature. Although overhang seats are common in MMP elections, they would not be expected to add more than a few additional seats in total. Again depending on the implementation, if a party is entitled to more seats than it would be allowed as a result of the party election, balancing seats may be granted to other parties in order to preserve proportionality.
- In a **parallel system**, there are no “overhang” seats. Both the number of district seats and the overall number of party seats are fixed in advance and don’t change.

- Here is a sample parallel election ballot filled out:

You have 2 votes				
One vote on this side for your district representative		One vote on this side for a party , in order to allocate the <u>party</u> seats in the legislature in proportion to party votes		
First vote		Second vote		
Richard Smith, Lemon Party				Lemon Party
David Green, Raspberry Party				Raspberry Party
Olive Worden, Orange Party	x	x		Orange Party
Rachel Ostrovski, Apple Party				Apple Party

Where Used and for How Long

Mixed-member proportional (MMP) representation originated in Germany after WWII. It is currently being used in some form in Germany, Bolivia (1994), Lesotho (2002), New Zealand (1996), Thailand (2019), South Africa (in all municipalities but not national elections), Scotland, Wales and for the London Assembly.

Four countries are considering proposals for moving to MMP representation nationwide: Canada, Costa Rica, Sri Lanka and South Africa.

Countries that have switched to other methods but that formerly used MMP representation include Albania (2001-2005), Hungary (1990-2012), Romania (2008-2016), and Venezuela (until 2009).

Parallel voting is the third most frequently used system for electing national legislatures. It is used in Hungary, Italy, Japan, Lithuania, Mexico, Russia, South Korea, Taiwan, among many others.

Strengths

- Both methods combine close geographical relations between representatives and voters with proportionality of representation for all the significant political perspectives in the country. In a mixed member system, the proportionality is strong. Parallel voting is weaker in this respect since proportionality arises only among the seats elected on the party vote side.

Weaknesses

- Voters don't always understand that the party vote is more important than the vote for the district representative in that the party vote determines the number of seats the party will hold.
- These systems can give rise to various forms of strategic voting.

Conflicting Opinions and Two-Edged Swords

- The distinction between party representatives and district representatives can create two factions among legislators: one group that is primarily obligated to a territory and another from a party list without geographic ties and more obligated to the national or statewide party. This lack of unity and the need for working in collaboration with other parties may make it more difficult for a party to achieve its policy goals, but it could also reduce polarization and gridlock.
- Both multi-member proportional elections and parallel voting elections are subject to gerrymandering in the district elections. Some observers believe that gerrymandering in MMP would not affect the election results in a negative way.

+++++

Overarching Aspects for All Systems

What follows are aspects of Washington elections that are not tied to any particular voting system.

a) The Issue of Gerrymandering

Gerrymandering is the practice of drawing electoral district boundaries in order to predetermine subsequent election results. It is increasingly recognized as an affliction whenever Americans are choosing the members of a legislative body, e.g. U. S. House of Representatives, state legislatures, county and city councils. Gerrymandering is possible because in any single-winner system of elections, the way district lines are drawn inherently affects election results.

A few states, Washington among them, use citizen commissions at least to some degree beyond the influence of politicians. (See the 2017 LWVWA report on redistricting at www.lwvwa.org/redistricting.) In most states, the lines are drawn by politicians and aim to achieve political results favorable to those drawing the lines—keeping incumbents in office, achieving or preserving a legislative majority. Even if it is not politicians who draw the lines, each district inevitably includes a certain composition of voters, and whatever array of voters are included largely predetermines voting results in the district until the next redistricting.

As we have noted, there are various forms of multi-winner elections that effectively make gerrymandering impossible.

b) Elections in Single-Member Districts, Elections to a Single Position, At-Large Elections

All of Washington state's elections are required by law to elect people to one position at a time. This is by definition true of offices with a single holder such as governor or mayor.

It is also true when we elect a body such as either house of the state legislature or the local county council. We elect state senators one to a district. We elect state representatives two to a district, but one to a position. In counties that have the commissioner form of government, county commissioners are elected at-large in countywide general elections, although they must each reside in different commissioner districts, and may have first fought out primaries in their respective commissioner districts. The same goes for city councils, port district commissions, public utility district (PUD) commissions, school boards, and on down the list of our numerous local elected boards.

All of these elections are subject to Washington state's top-two primary rule, and are vulnerable to gerrymandering.

c) Washington's Top-Two Primary

Washington was the first state in the country to establish a top-two primary voting system, rather than a party nominating system. The two candidates who receive the most votes in the primary

advance to the general election regardless of their party preference. This kind of primary was adopted by initiative in November 2004, and was approved by the voters by nearly 60 percent.

One result of having no more than two candidates in the general election is that the spoiler effect can have no influence at that level. There is no penalty if a voter votes for the candidate that the voter actually prefers.

The spoiler effect does operate in the primary, and therefore tends to encourage strategic voting at that level.

Another difficulty with the top-two primary is that if there are many candidates, there may be more votes in the aggregate for the candidates that lose in the primary than for those who win. It is then hard to say that the ultimate winners are “the choice of the people.”

d) Voting Equipment

All of the presently installed ballot reading and tabulating systems are capable of handling plurality elections and Washington’s top-two primaries. Without going into details, it should be possible for all counties in Washington state to adapt their vote-recording and tabulating equipment to any of the systems described in this report without major effort or expense. Vendors are prepared to deliver equipment and software capable of handling all the systems discussed in the report.

At present in Washington state, for example, nine counties have vote-recording and tabulating equipment that is entirely ready for ranked-choice elections; 26 can record RCV ballots, but must export the results to separate tabulating equipment; and four are not presently able to count RCV ballots.

Other than plurality voting, the various methods discussed in this report would require redesigned ballots. Often the ballots would include two kinds of elections—for example, ranked-choice voting for the city council and plurality voting for the state legislature. Some commentators have expressed alarm as to whether voters will be able to follow how they are to vote when faced with two different election methods on the same ballot. Experience has shown, however, that voters can manage well.

+++++

Appendix A: Glossary

At-large election – In many Washington counties, cities and other local bodies, many positions in the relevant governing council (County Council, City Council, Port Commission, etc.) are elected at-large. The entire county or city, for example, is the “district” from which they are elected. The entire electorate of the county or city concerned participates in the election.

Bullet-voting – In a non-ranking form of election like cumulative voting, limited voting, approval voting, or score or range voting, putting all the voters’ votes, approvals, or scores on one candidate in collaboration with other voters who have a similar political perspective – a form of strategic voting.

Election method - the voting and vote-counting processes in an election

First-past-the-post election – The same as a winner-take-all election or a plurality election. See winner-take-all, majority, plurality.

Gerrymandering – The practice of drawing electoral district boundaries in order to affect subsequent election results, a form of election-rigging. Gerrymandering is often used to ensure as much as possible the reelection of incumbents. It is a risk in any single-winner voting system.

Insincere voting – A synonym for tactical or strategic voting. See “lesser of two evils”, spoiler effect.

Lesser of two evils – the dilemma that voters frequently face in a plurality election: they feel compelled to vote for someone that they don’t really favor (the lesser of two evils) – and not vote for the candidate that they really do favor – so that the candidate that they most dislike is not given an advantage. See insincere, tactical and strategic voting and the spoiler effect.

Majority election – an election in which the threshold for election is more than half of all the votes cast (50%+1). Contrast plurality election, proportional representation election.

Multi-member district - an electoral district from which two or more members are sent to the body being elected (e.g., legislature, county council). Washington has the appearance of multi-member legislative districts, but since we elect representatives to specific seats, these seat-by-seat elections effectively function like an election from single-member districts. In a true multi-member district system, all candidates in a legislative district would compete against each other.

Multiple-winner election – an election where two or more people are elected to a body in a single pool. It is not to be confused with an election in which there may be more than one representative from a given district, but each is elected independently. Proportional representation (ranked-choice election in any of its multiple-winner forms), cumulative voting, and limited voting can be used for multiple-winner elections.

“One person, one vote” – a principle adopted by the U.S. Supreme Court in 1962 requiring congressional districts and legislative districts within a state to have substantially equal

populations. The principle does not, however, necessarily lead to equality in representation. For example, between states the population of congressional districts varies from about 500,000 to about 1,000,000 depending on the state. Between the largest state and the smallest, the number of people represented by a single U.S. Senator is different by a factor of 69. These inequalities are carried into the Electoral College, where the number of Electors in each state's delegation is the sum of the number of representatives in its congressional delegation plus two for the two senators.

Overhang seats - In a mixed-member proportional (MMP) election, if a party is entitled by virtue of the results of the party side of the election to four seats but five members of that party have been elected on the district side, the additional seat is called an "overhang seat".

Plurality election – an election in which the threshold for election is that the candidate receive more votes than any other candidate. In such a system, the winning percentage may be significantly less than a majority. Contrast majority election, proportional representation election.

Proportional representation election - an election in which the percentage of seats held by a political perspective or party in a legislative body corresponds closely with the perspective's or party's percentage of the popular vote. Proportional representation is not possible in single-member districts. The degree of proportionality increases as the number of representatives from the district increases.

Single-member district - an electoral district having a single representative in a legislative body. The Washington State Senate is an example of a body elected with single-member districts. The Washington State House has two members per district, but they are each elected to separate positions within the district. It is as if they had separate districts which happened to overlap.

Single-position election – an election to a position in a district in which there are two or more separate "positions" in the body concerned. Examples are the two positions in a Washington state legislative district, the two positions in the county council districts in some charter counties, and the three positions in the county commission of a Washington county that has the county commissioner form of government.

Single-winner election – an election where there is a single winner, for example, elections from a single-member district, single-position elections, and at-large elections.

Strategic voting – A synonym for insincere or tactical voting. See lesser of two evils, spoiler effect.

Spoiler effect – A candidate that the voter prefers, but who lacks sufficient support to win, is often referred to as a "spoiler." The presumption is that a vote for such a candidate may cause a candidate more strongly opposed to the voter's views to win. See tactical, strategic and insincere voting, lesser of two evils.

Tactical voting – when a voter casts a ballot that does not reflect the voter's true preference among candidates. It is sometimes done in hopes of avoiding a victory by a candidate that the voter does not favor at all. See insincere and strategic voting, spoiler effect, lesser of two evils.

Threshold for election – generally speaking, the number of votes that a candidate must receive in order to be elected. The threshold (often expressed as a percentage of the turnout) varies depending on the type of election.

- Majority election – a candidate must receive a majority of the votes cast (more than half).
- Plurality election – a candidate must receive more votes than any other candidate. A plurality threshold may be significantly lower than a majority, depending on the number of candidates, and how the voters vote.
- Proportional representation election – a candidate must receive a number of votes roughly inversely proportional to the number of seats being filled. For example, if five seats are being filled, the threshold is one-sixth of the votes cast plus one more vote. If the election is a list proportional representation election, the threshold is not for individuals, but the percentage of the overall vote that a party gets determines how many of its members are elected.

Voting system - All elements of the election, including the laws, the equipment, the voting and counting process. In the literature, election method and voting system are often used interchangeably.

Wasted votes – In the sense used by political scientists, wasted votes are those that do not increase representation for those voting. The votes for any losing candidate are wasted in this sense. Beyond these, there are also the votes for a winning candidate beyond the number that the candidate needed to win (surplus votes). It is by manipulating where wasted votes of either type are concentrated or dispersed (“packed” or “cracked”) that gerrymandering achieves its aims.

In the United States, the term tends to be used in a very specific way: it refers to votes cast for a third-party candidate, and it carries the implication that one who votes for a third-party candidate aids the election of someone else.

Winner-take-all election – a single-winner voting system in a single-member district or the equivalent, in which the person receiving the most votes is the winner.

- May operate under either a plurality or a majority principle.
- Vulnerable to gerrymandering and the spoiler effect.

See single-member district, single-winner election, single-position election, at-large election.

Appendix B: An Example of Criteria for Evaluating Methods

This toolbox does not attempt to evaluate the various systems using criteria. It merely reports what others have said about each of the systems.

Theoreticians and other students of voting systems have identified numerous criteria by which to evaluate voting systems. For example, the League of Women Voters of California has developed the list of criteria shown in the box below. Other lists have dozens of criteria, and there are numerous lists of criteria.

Whether for single or multiple winner contests, the League supports electoral methods that:

- Encourage voter participation and voter engagement
- Encourage those with minority opinions to participate, including under-represented communities
- Are verifiable and auditable
- Promote access to voting
- Maximize effective votes / minimize “wasted” votes
- Promote sincere voting over strategic voting
- Require the winner to receive a majority of the votes for executive and single-seat offices
- Are compatible with acceptable ballot-casting methods, including vote-by-mail

Source: League of Women Voters of California
lwvc.org/position/electoralprocess

Appendix C: How the Various Election Systems Are Related

The systems share various characteristics with one another, and they do this in several different ways. The tables below show some of these relationships of systems of significance. All of the systems named in these tables are described in detail in this report.

One way to classify elections is by whether the result of the election is non-proportional, semi-proportional, or proportional; that is, how well the percentage of seats held by members of a political party corresponds to that party's percentage of the popular vote.

Non-Proportional Systems (Single Winners)	Semi-Proportional Systems (Multiple Winners)	Proportional Systems (Multiple Winners)
Plurality Voting (Winner-Take-All, First-Past-the-Post) Approval Voting Score or Range Voting STAR Voting Single-Winner Ranked Choice Voting	Cumulative Voting Limited Voting	List Proportional Representation Multi-Winner Ranked Choice Voting

Another way of classifying voting systems is based on whether voters rank their choices of candidates or simply express a yes – or a score – for one or more candidates. Using that system, the following methods are classified thus:

Ranking Systems	Non-ranking Systems
Single-Winner Ranked-Choice Voting Multiple-Winner Ranked-Choice Voting	Approval Voting Cumulative Voting List Proportional Representation Plurality Voting (Winner-Take-All, First-Past-the-Post) Score or Range Voting STAR Voting Mixed Member Proportional Representation Parallel Voting

Finally, some systems are hybrids of two of the other systems:

System	Takes elements from
Mixed-Member Proportional Representation	Winner-Take-All (WTA) and one of the forms of Proportional Representation (with the PR part of the election determining in part how many of the WTA winners will serve)
Parallel Voting	Winner-Take-All and Proportional Representation (not dependent on one another)
STAR Voting	Score Voting and Instant Runoff Voting

Appendix D: Resources

Single Winner Voting Systems

Plurality Voting

King, Charles, Electoral Systems, faculty.georgetown.edu/kingch/Electoral_Systems.htm, viewed 11/30/19

Mast, Tory, History of Single Member Districts for Congress: Seeking Fair Representation Before PR, 1994, fairvote.org, viewed 11-27-19.

Minguo.info, Plurality Voting Explained, minguo.info/election_methods/plurality, viewed 11/30/19

Mohita, Negi, Election Procedure in India (8 Steps), www.yourarticlelibrary.com/essay/election-procedure-in-india-8-steps/24935.

Ndiewo, Kingsley, The unique elections history for Kenya, standardmedia.co.ke/ureport/story/2001243987/, viewed 11/30/19

Shahandashti, Siamak F., Electoral Systems Used around the World. In Feng Hao and Peter Y. A. Ryan, editors, *Real-World Electronic Voting: Design, Analysis and Deployment*, Series in Security, Privacy and Trust. CRC Press, 2016. (in press).

Approval Voting

Balinski, Michel and Rida Laraki. Majority Judgment (Chapter 18). MIT Press 2011. www.mitpress.mit.edu Read 8-10-2019

Brams, Steven J. Approval Voting: A Better Way to Select a Winner. (a guest opinion column by a MIT alumnus), www.rangevoting.org, read 8-10-2019

Brams, Steven J., and Markus Brill, The Excess Method: A Multiwinner Approval Voting Procedure to Allocate Wasted Votes

Brams, Steven, Fishburn, Peter. Approval Voting. Electing a Single Winner: Approval Voting in Practice. Princeton University Press (Chapter 1). www.assets.press.princeton.edu. Read 8-10-2019

Center for Election Science, Approval Voting. www.electionscience.org/Approval_Voting Read 8-10-2019

FairVote, Ranked Choice Voting/Instant Runoff. www.fairvote.org Read 8-10-19

Hamlin, Aaron, The Center for Election Science, Ten Critiques (and Defenses) On Approval Voting. www.bridgealliance.us/ten_critiques_and_defenses_on_approval_voting, read 8-15-19

Hamlin, Aaron, The Center for Election Science, Voting Methods Progress,
<https://www.electionscience.org/voting-methods/approval-voting-progress/> read 8-17-19

Laslier, Jean-Francois. And the loser is...Plurality Voting, (2011), hal.archives-ouvertes.fr/hal-00609810/document

Laslier, Jean-Francois, & Karine Van der Straeten. A live experiment on approval voting.
https://econpapers.repec.org/article/kapexpeco/v_3a11_3ay_3a2008_3ai_3a1_3ap_3a97-105.htm

Lumen Learning, Voting Theory, Approval Voting, courses.lumenlearning.com/wmopen-mathforliberalarts/chapter/introduction-approval-voting/ Read 8-10-2019

O'Neill, Jeffrey C. Everything That Can Be Counted Does Not Necessarily Count: The Right to Vote and the Choice of a Voting System, papers.ssrn.com/sol3/papers.cfm?abstract_id=883058 Read 8-10-2019

OpaVote, Approval Voting , www.opavote.com/methods/approval-voting, Read 8-10-2019

Quinn, Jameson. What are the advantages and disadvantages of approval voting versus ranked voting? www.quora.com/What-are-the-advantages-and-disadvantages-of-approval-voting-versus-ranked-voting ,Read 8-10-2019

Richie, Rob, New Lessons from Problems with Approval Voting in Practice,
www.fairvote.org/new_lessons_from_problems_with_approval_voting_in_practice

Sightline, Sightline's Voting System Reform Priorities in Washington, 4-3-17,
www.sightline.org/research_item/sightlines-voting-system-reform-priorities-in-washington/,
 read 8-10-19

Smith, Warren D., A Paean to Approval Voting – "Count all the votes".
www.rangevoting.org/Approval.html

Score or Range Voting

Case, Nicky, To Build a Better Ballot, an interactive guide to alternative voting systems,
ncase.me/ballot/ viewed 11-28-19

Center for Election Science, Score Voting, Retrieved 12-10-16.

RangeVoting.org, Good criteria support range voting, Retrieved 5-15-18.

RangeVoting.org, Rating Scale Research, Retrieved 5-15-18.

Smith, Warren D., Range Voting: The Best Way to Select a Leader?, rangevoting.org/SmithWM.html,
 viewed 11-28-19

Social Choice and Beyond, Range Voting, Retrieved 12-10-16.

Should you be using a more expressive voting system?, voteupapp.com, Retrieved 5/15/18.

Single Winner Ranked-Choice Voting

- Chevalier, Barbra, Deb Karstens, and Christy Krashan, League of Women Voters of Seattle / King County, A Summary of Alternative Voting Methods and Considerations for Washington State, The Voter, September, 2018,
www.seattlelwv.org/uploads/1/1/7/8/117877553/votersept18web.pdf
- Collingwood, Loren, Donovan, Todd, Barreto, Matt , A Research Report of The Washington Poll, An Assessment of Rank Choice Voting's Debut in Pierce County, WA, June 8, 2009,
https://wei.sos.wa.gov/agency/osos/en/press_and_research/VotingSystems/Dominion/2008/documents/rank_choice2009.06.pdf , viewed 1/11/20
- League of Women Voters of Oregon, Election Methods Study (2016), updated 2017, lwv.or.org/wp-content/uploads/2016/10/Elections-Methods-Study-2016-Updated-Feb-2017.pdf
- Livni, Ephrat, The Pros and Cons of Ranked-Choice Voting, qz.com/1676718/the-pros-and-cons-of-ranked-choice-voting/, July 31, 2019.
- Keller, Betty, League of Women Voters of Vermont, Pros and Cons of Instant Runoff (Ranked Choice) Voting, my.lwv.org/vermont/article/pros-and-cons-instant-runoff-ranked-choice-voting
- FairVote, Data of Ranked-Choice Voting Campaign Civility,
https://www.fairvote.org/data_on_rcv#research_rcvcampaigncivility
- FairVote, Introduction to ranked choice voting administration,
www.fairvote.org/rcv_administration#introduction_to_ranked_choice_voting_election_administration
- FairVote, Voter Turnout Surges in All Four Cities with Ranked-Choice Voting,
https://www.fairvote.org/voter_turnout_surges_in_all_four_cities_with_ranked_choice_voting
- FairVote, Where is Ranked Choice Voting Used?,
www.fairvote.org/rcv#where_is_ranked_choice_voting_used
- Minneapolis, City of, How Ranked-Choice Voting Works (video), vote.minneapolismn.gov/rcv/ viewed 1/11/20
- Ranked Choice Voting Resource Center, www.rankedschoicevoting.org/
- Ranked Choice Voting Resource Center, Where Ranked-Choice Voting is Used,
https://www.rankedschoicevoting.org/where_used viewed 1/11/20
- Ranked Choice Voting Resource Center, Where Ranked-Choice Voting Has Been Adopted,
<https://www.rankedschoicevoting.org/adopt> viewed 1/11/20
- Reilly, Maura, How Ranked-Choice Voting Shaped the Feminist Victories of the 2019 Elections,
<https://msmagazine.com/2019/11/12/how-ranked-choice-voting-shaped-the-feminist-victories-of-the-2019-elections/> viewed 1/11/20
- Represent.us, Ranked-Choice Voting, act.represent.us/sign/ranked-choice-voting, viewed 11-29-19
- St. Louis Park, Minnesota, Charter Commission, Expert Panel on Ranked Choice Voting, Minutes,
www.stlouispark.org/home/showdocument?id=9648
- StarTribune, How it works, static.startribune.com/news/legacy-apps/20130915-ranked-choice-voting/, viewed 11-29-19

Multiple Winner Systems

Party List

Ace Electoral Knowledge Network, aceproject.org, viewed 11-21-19.

International Institute for Democracy and Electoral Assistance (IDEA), www.idea.int/, viewed 11/27/19

FairVote, How Proportional Representation Elections Work, https://www.fairvote.org/how_proportional_representation_elections_work, viewed 11/29/19

Multiple-Winner Ranked-Choice Voting

Ace Electoral Knowledge Network, Proportional Representation, aceproject.org, viewed 11-20-19

Amy, Douglas J. , Common Criticisms of Proportional Representation and Responses to Them, www.fairvote.org/common_criticisms_of_pr_and_responses_to_them, viewed 11/29/19

How Proportional Representation Would Finally Solve Our Redistricting and Gerrymandering Problems https://www.fairvote.org/how_proportional_representation_would_finally

Donovan, et al, Voting systems and Voter Turnout: Experiments in the United States, archive.fairvote.org/vra/donovan.pdf

FairVote, How Proportional Representation Elections Work, https://www.fairvote.org/how_proportional_representation_elections_work, viewed 11/29/19

International Institute for Democracy and Electoral Assistance (IDEA), www.idea.int/, viewed 11/27/19

Proportional Representation Foundation, Proportional Representation Timeline, prfound.org/resources/timeline, viewed 11/20/19

Star Voting, Proportional Representation, www.starvoting.us/pr, viewed, 11/29/19

Cumulative and Limited Voting

Benaloh, Josh, Microsoft Research, The Weakness of Cumulative Voting. Conference paper, International Joint Conference on electronic voting, 6-October 2017. [Link.springer.com](http://link.springer.com). Read 11-12-19

Brennan Center for Justice, A Citizen's Guide to Redistricting, 2010, read 11-12-19

Brennan Center for Justice, Agenda for Election Reform, 2007, read 11-12-19

Cumulative Voting. Ballotpedia.org, read 11-12-19

Eberhard, Kristin. *Sightline's Guide to Methods for Electing Legislative Bodies*. Sightline, May 18, 2017, read 11-12-19.

Ginsburg, Adam, FairVote, Cumulative voting comes close – but not all the way – to fair representation,
www.fairvote.org/_cumulative_voting_comes_close_but_not_all_the_way_to_fair_representation,
viewed 11-12-19

Grossman, Ron, What if you really could vote early and often? Chicago Tribune, March 10, 2016.
Read 11-12-19

Limited Voting, Cumulative Voting and Choice Voting: A Comparison of Three Alternative Voting Systems. Archive.fairvote.org. Read 11-12-19

Lewyn, Michael E. *When Is Cumulative Voting Preferable to Single-Member Districting?* New Mexico Law Review: 25 N.M.L.Rev. 197 (Summer, 1995). Read 9-15-2019

Novoselic, Krist. *A Free and Fair Vote Gives Power to the People.* Seattle Weekly, published August 18, 2008. Read 9-15-2019

Pildes, Richard, and Kristen Donoghue, *Cumulative Voting in the United States*, University of Chicago Legal Forum, Vol 1995, Issue 1, Article 10. Read in chicagounbound.uchicago.edu 9-15-2019

Segura, Gary and Shaun Bowler, ed. *From Diversity in Democracy: Minority Representation in the United States.* Books.google.com, read 9-15-2019

Social Science Quarterly, 13 April 2016. Read onlinelibrary.wiley.com 9-15-2019

Sources found in LWVOR Election Methods Study Update, lwvor.org:

Gierzynski, Anthony et al. *The Pros and Cons of Multi-Member Districts.* Vermont Legislative Research Service. read 9-15-2019

Cumulative Voting. A Commonly Used Proportional Voting Method. Archive.fairvote.org. Read 9-15-2019

Black Representation Under Cumulative Voting in IL Archive.fairvote.org. Read 9-15-2019

Hybrid Systems

STAR (Score, Then Automatic Runoff)

Dempsey, Emily, Later No Harm and the Spoiler Effect
https://www.starvoting.us/farewell_to_pass_fail , viewed 1/12/20

Griffiths, Shawn, Are We Witnessing the Cutting Edge of Voting Reform, Independent Voter News, Feb. 1, 2018, ivn.us/2018/02/01/cutting-edge-voting-reform/ , viewed 11/28/19

Eberhard, Kristin, My Big, Bold Ranked-Choice Voting Proposal, Feb 1, 2018. read 1-12-20

Eberhard, Kristin, Two Upgraded Voting Systems are Gaining Favor in United States, January 24, 2019. read 1-12-20

Equal Vote Conference, October 4, 2014. University of Oregon Knight Law School. www.equal.vote read 1-12-20.

Frohnmayr, Mark, The Relaxed Majority Criterion, Equal.Vote, March 13, 2017, www.equal.vote/rmc, viewed 11/28/19

Quinn, Jameson: A Voting Theory Primer for Rationalists. April 12, 2018. lesswrong.com read 1-12-20

Quinn, Jameson: vse-sim. electionscience.github.io. no date, but after his 'A Voting Theory Primer.' read 1-12-20

STAR Voting, www.starvoting.us, viewed 11/28/19

STAR Voting, Presentation to Sightline, www.starvoting.us/presentation, viewed 11/28/19

Wolk, Sara, Leading Voting Methods: Pros and Cons, www.starvoting.us/pros_and_cons, viewed 11/28/19

STAR Voting in Under Five Minutes, www.youtube.com/watch?v=aiQ9Z5sME00 10/23/17, viewed 11/28/19

Mixed member proportional voting and parallel voting

ACE Project Electoral Knowledge Network. "Mixed Member Proportional (MMP)", viewed 11/20/19.

ACE: The Electoral Knowledge Network: Pros & Cons of a PR System

Amy, Douglas J., Mount Holyoke College, What is "proportional representation" and why do we need this reform?, www.fairvote.org, viewed 11-18-19.

Amy, Douglas, *Real Choices, New Voices*, 2nd ed, Columbia University Press, 2002, pp. 229-230.

Fair Vote Archive: Developments for Proportional Voting Around the World (Sept. 2005)

Fair Vote Archive: Fear, fact and fiction: Covering electoral reform in Ontario (February 22, 2007)

Fair Vote Archive: Program for Representative Government Mixed Member Systems (2007)

Grey, C.G.P., Mixed Member Proportional Representation Explained, www.youtube.com/watch?v=QT0I-sdoSXU

Jones, Mark, Professor of Political Science at Rice University, Electoral Systems Around the World, www.fairvote.org