

VOTING SYSTEMS

444 Lecture 7

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HOW MANY TO ELECT

A BIG CHOICE POINT

I'm going to primarily discuss here systems for electing a **legislature**.

I'll note some applications to other tasks.

These might be political (e.g., electing a President), or something more local (e.g., deciding as a group which movie to watch).

But because of its importance, we'll start with legislatures.

BACKGROUND QUESTION

In most countries, electing the legislature is doubly important because it goes on to elect the executive. I'll briefly talk about the consequences of this, but since the United States is one of the few exceptions to this setup, I won't spend too much time on it.

CHOICE POINT

Do you elect one legislator at a time, or multiple at a time?

- Extra choice point: do you have multiple cycles for the same district, or just elect people for one cycle?
- The 'just one cycle' approach is very standard, but the United States Senate is a very notable exception, and this carries across to a lot of State Senates.

CHOICE POINT

But ignore the Senate complication for now - the big question is this.

- At an election, when you make a vote, is the election you're voting in (at that moment) going to elect one person, or many people?
- In the most important elections in the US, the answer is 1.
- There are some exceptions at local level (e.g., Ann Arbor school board), but for the most important things, the answer is 1.

TWO KINDS OF SYSTEMS

1. Single Member Constituencies
2. Multi Member Constituencies

The difference is how you answer the question on the previous slide.

The United States Senate is a Single Member system, although there are two Senators from each state.
(Electoral systems are a mess.)

PLAN FOR WEEK

- Commonly used single member systems today.
- Rarely used single member systems on Thursday.
- And then multi member systems on the rest of Thursday.

WHY NOT SINGLE MEMBER

BOUNDARY SHENANIGANS

Single member systems make the boundaries of those districts really important, which encourages mucking about with those boundaries.

This is commonly called gerrymandering.

It's actually not a big deal in 95% of the world. But we live in the other 5%.

IGNORING LARGE AREAS

Campaigns for parliaments elected with single-member districts routinely ignore large chunks of the country.

In my home state (Victoria, Australia), I believe the conservatives haven't won a single district on the western side of the main city in my lifetime. And they've been in government half that time. They can (and do) simply ignore a huge chunk of the population.

IGNORING LARGE AREAS

And of course we see the same in the United States.

- Joe Biden's re-election campaign will not spend a lot of time in Tennessee or Missouri, or in California or New York.
- The Senate election will concentrate on about 5 states.

OVERPOWER SWING VOTERS

This is the flip side of ignoring many people.

The ones you don't ignore get super-powered.

In a lot of places (including several US states) these tend to be fairly well-off suburban areas. In Michigan in 2022 this wasn't quite the case - the real center of attention was Downriver.

UPSIDE OF SINGLE-MEMBER DISTRICTS

We'll come back to this on Thursday, but the big upside is in transparency and responsiveness.

PLURALITY

THE SIMPLEST POSSIBLE VOTING SYSTEM

- The candidates are listed on a ballot paper (or a machine).
- Each voter puts a mark beside one candidate. Call this a vote.
- The candidate with the most votes wins.

UNITED STATES

In some sense this is the system we primarily use in the United States, with three (really) big qualifications.

- Qualification One: For President, this goes via the Electoral College.
- Qualification Two: Being listed on the ballot is non-trivial.
- Qualification Three: There are primaries.

STRENGTHS OF THIS SYSTEM

Really incredibly simple. This means:

1. It's simple to understand how votes and wins are related.
2. It's simple to work out on election night who won.

It does not mean that it's simple for the voter to figure out what to do. We'll come back to this.

STRENGTHS OF THIS SYSTEM

Like any other single-member voting system, it tends to elect strong governments, i.e., governments with a majority of the House.

It's very easy for a large party to win a majority of the seats in a nationwide election under this system. This is practically guaranteed in a two-party country like the US, but it also happens in the UK where there are usually 8-10 parties in parliament.

DISADVANTAGES

1. Disproportional - minority parties end up with majority.
2. Disordered - parties with fewer votes end up with more seats.
3. Hard decisions - we'll talk about this in a bit.
4. Lack of communication across time - also come back to this.

You've probably thought about the last two.

EXAMPLES

If we make the examples too realistic, we run into a risk (well, I run into a risk) of violating UM policies on what people up on stage can legally say in class.

It's a good thing there aren't ballot measures on voting systems up this year, or I probably couldn't teach this unit.

Instead I want to give us a toy example that we'll come back to.

VOTE FOR A SONG

- a. "Kill Bill" by SZA
- b. "Flowers" by Miley Cyrus
- c. "Ella Baila Sola" by Eslabon Armado, Peso Pluma
- d. "Boy's a liar Pt. 2" by PinkPantheress, Ice Spice
- e. "Cruel Summer" by Taylor Swift

A CHALLENGE FOR VOTERS

Imagine a voter with the following characteristics.

- They care about the election result.
- They have a preferred candidate.
- They don't think that candidate will win.
- Between the candidates that are likely to win, they have a clear preference.

What should they do?

ANOTHER CHALLENGE

Imagine a voter in the following election.

- There are three candidates, A, B and C.
- The voter really dislikes A, and is indifferent between B and C.
- They think that if everyone voted for their favorite candidate, it would be 40% A; 30% B; 30% C.

What should they do?

EXTENDING THE CHALLENGE

If you are a politician in B or C in the previous example, what do you do?

Do you spend more of your time arguing

1. That you are better than the other of B/C?
2. That you are more popular, and hence more likely to win, than the other in B/C?

In practice in the UK, it's often option 2.

COMMUNICATION

In a two party system, several voters have to compromise.

1. Some of these are voters whose views are more extreme than the major parties.
2. Others are voters who are cross-pressured, who agree with one of the parties on some things, and the other party on others.

Australia in the last 25 years has seen big movements towards parties in both these dimensions.

COMMUNICATION

I think there's some reason to think that some voters have the following combination of views.

- They fit into one of the two categories on the previous slide.
- They wouldn't really act on this unless they thought that a lot of other people had similar views to theirs.

If everyone compromises in their votes, these voters don't learn that there are other voters like them.

RUNOFF SYSTEMS

BASIC IDEA

Vote in two stages.

1. Every candidate is on the ballot, everyone votes.
2. A second round of voting between the top two vote getters, most votes wins.

TWO VARIANTS

If a candidate gets a majority of the vote in the first round, do you even have the second round?

- In France, where this system is widely used, they do not.
- In California, where in effect this system is used (though not quite under this name), they do.

I'm going to ignore this complication.

DOWNSIDE

Two elections - twice the expense both for states and for voters.

DOWNSIDE

Non-monotonic. Getting less votes can make you a winner.

This is a bit complicated, so I'll work through it on next slide.

NON-MONOTONIC

Three candidates: A (40%), B (31%), C (29%).

B's voters are split between A and C for their second choice.

C's voters all prefer B to C.

Question: Who will win a run-off election (if everyone votes sincerely)?

NON-MONOTONIC

Due to a minor scandal, 3% of A's voters switch to C.

Now it's A (37%), B (31%), C (32%),

Question: Who will win?

UPSIDES

Removes some of the problems with plurality.

- Less of a challenge for voters; though maybe not zero challenge in cases like the previous two slides.
- Possible for minor party voters to communicate.

ANOTHER SONG VOTE

I'll do another vote for the top two from the song voting.

But first a question: Would anyone have voted differently if they knew it was a runoff?

INSTANT RUNOFF

HOW TO VOTE

Voters don't just mark a single candidate.

- Rather, they list their preferences between candidates. In effect, they rank order the candidates.
- Some potential variations here.
- Some systems only allow a first and second choice.
- Some require a full preference ranking.
- Others allow the voter to rank as many as they like.

HOW TO COUNT

1. Add up all the first-preference votes.
2. If someone has over 50%, they win.
3. If not, eliminate the candidate with the fewest votes.
4. For each ballot paper, move it to the highest ranked remaining candidate.
5. Recount all the votes, with these moved votes included.
6. Go to step 2.

EXAMPLE

I made a [Google Sheet](#) with some worked examples of this to show how it works.

If we have time (we probably won't), I'll walk through some of them.



[Link to a Google Sheet](#)

DOWNSIDES

- The non-monotonicity problem remains.
- Can be slow to count, especially if you're doing 30 elections at a time like in US.
- Voters don't have preferences over all N candidates.
- Between 1 and 3 percent of voters routinely mislabel their ballots, disenfranchising themselves. Sometimes this is intentional, but not always.
- Some people think (though I don't) that it's a kind of double voting to have your vote be counted many times over.

UPSIDES

Voters don't have to make quite as many strategic choices (unless the non-monotonicity problem comes up).

Allows for finer divisions of parties; Australia now has something like a five-party system, with two left, two right, and one centrist. (This is an *incredibly* rough description.)