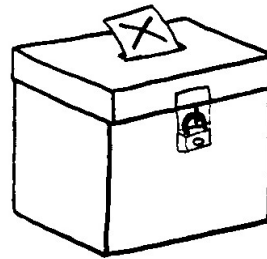


## A primer on voting systems

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## Voting systems



- The ballot
- Seats per electoral districts
- The algorithm (votes → seats)

## FPTP doesn't serve voters

- Phony majorities
  - Ontario (since 1937)
  - Canada (since 1984)
  - Quebec (since 1985)
- Half the voters are unrepresented, while others are overrepresented
- How can institutions be accountable?

## Single member plurality (First past the post)

The ballot:	One X per vote
Seats per electoral district:	308 ridings of one seat
The algorithm:	The seat is given to the candidate with at least 1 more vote than everyone else.

## FPTP doesn't serve voters

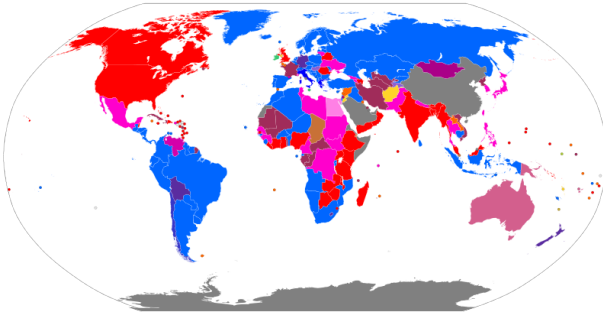
- Under representation of women and ethnic minorities;
- Exaggeration of regional differences

Canadian federal election 2011		
Ontario	% votes	% seats
- Conservative	44	69
- Liberal	25	10
Quebec		
- NDP	43	79
- Bloc	23	5

## What is an electoral district?

- A bounded geographical area who's voters are represented by one **or more** legislators
- **Canada** : 308 electoral districts represented by 308 MPs
- **Australian senate** : 6 staes, each represented by 12 elected senators
- **Norway legislature** : 19 counties, each represented by 4 to 17 legislators

## Who uses FPTP?



Legend : [http://en.wikipedia.org/wiki/File:Electoral\\_systems\\_map.svg](http://en.wikipedia.org/wiki/File:Electoral_systems_map.svg)

## Mixed Member Proportional : The ballot

- Two votes :
  - One for local candidate
  - One for party

OFFICIAL MARK [Consecutive Number]

**YOU HAVE 2 VOTES**

**PARTY VOTE** **ELECTORATE VOTE**

Explanation: This vote decides the seats of seats which each of the parties listed below will have in Parliament. Vote by putting a tick in the circle immediately after the party you choose. Explanation: This vote decides the candidate who will be elected Member of Parliament for the electorate named ELECTORATE NO. Vote by putting a tick in the circle immediately after the candidate you choose.

Vote for only one party. Vote for only one candidate.

LABOUR ALLAN, Fred  
ACT NEW ZEALAND BARKER, Mary  
NATIONAL DENIS, Alister  
ALLIANCE ELLIS, John  
THE GREENS, THE GREEN PARTY OF NEW ZEALAND GREIG, Tony  
NZ FIRST LLOYD, Anne  
BOC MARTIN, Hamish  
CHRISTIAN DEMOCRATS SMITH, Elizabeth  
UNITED NZ OSBERT, Sebastian  
CHRISTIAN HERITAGE PARTY OF NEW ZEALAND UNITED NZ  
MIDDLELODDY SERIOUS PEOPLES, Wendy  
TE TAWHARAU QUENTIN, Oliver  
REPUBLICAN PARTY MIDDLELODDY SERIOUS  
DEMOCRATS ZAVIR, Whare  
ADVANCE NZ ZOSIS, Arthur  
CONSERVATIVE ZOSIS, Catherine  
SOCIAL DEMOCRATS ZUSCOE, Noel  
SUPERANNUANTS PARTY SMITH, Eugene  
TULIP, Belinda  
ZOSIS, Catherine

1. If you spoil this ballot paper, return it to the officer who issued it and apply for a new ballot paper.  
2. After voting, hide this ballot paper so that its contents cannot be seen and place it in the ballot box.  
3. You must not take this ballot paper out of the polling booth.

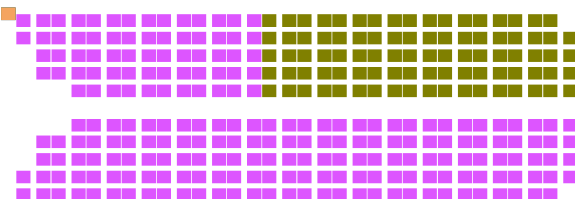
## Mixed Member Proportional

## Mixed Member Proportional The algorithm

- Winner of geographic seats are determined first
- List seats compensate for lack of proportionality

## Mixed Member Proportional The seats & riding

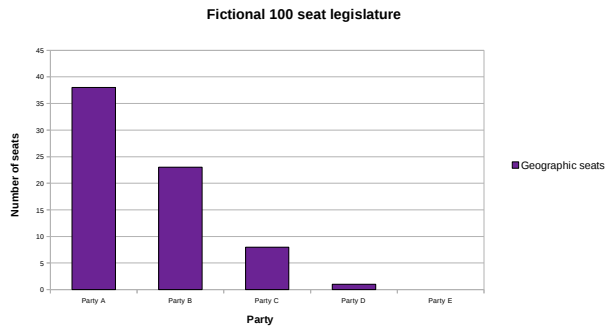
- One seat per geographic ridings;
- List seats for ridings that span the entirety or parts of the jurisdiction;



## MMP : The algorithm

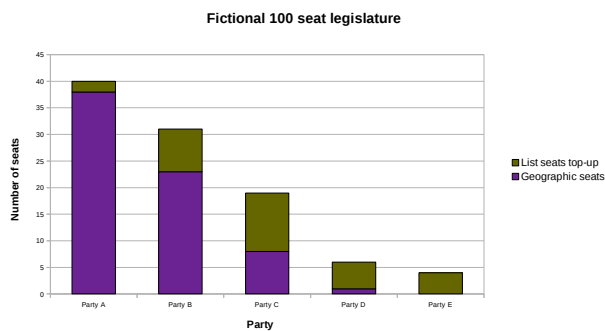
Fictional legislature of 100 seats			
	Geographic seats	% of vote	List seats
Party A	38	40%	2
Party B	23	31%	8
Party C	8	19%	11
Party D	1	6%	5
Party E	0	4%	4
Total	70	100%	30

## MMP : The algorithm



## Single Transferable Vote

## MMP : The algorithm



## Single Transferable Vote: The ballot

**Rank any number of options in your order of preference.**

- ☐ Joe Smith
- 1** John Citizen
- 3** Jane Doe
- ☐ Fred Rubble
- 2** Mary Hill

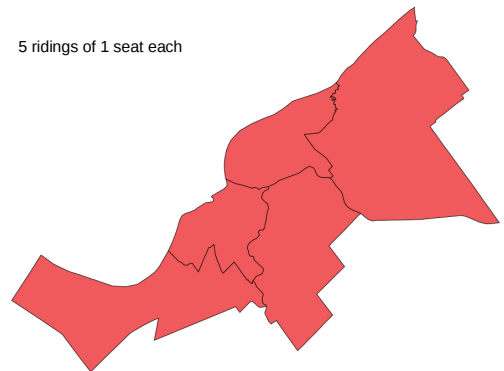
- Ranked vote
- No party list

## Mixed Member Proportional

The ballot:	<ul style="list-style-type: none"> <li>•One vote for a party</li> <li>•One vote for a candidate</li> </ul>
Seats per electoral district:	<ul style="list-style-type: none"> <li>•50%-70% are local electoral district</li> <li>•Remainder are list seats</li> </ul>
The algorithm:	<ul style="list-style-type: none"> <li>•Geographic seats first determined</li> <li>•List seats compensate for lack of proportionality</li> </ul>

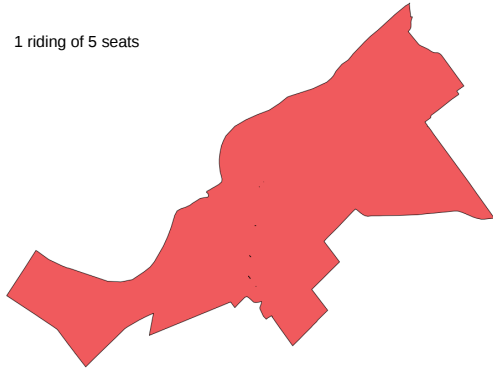
## Single Transferable Vote : The district & seats

5 ridings of 1 seat each



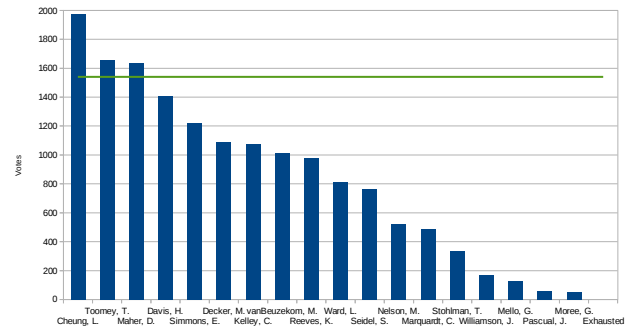
## Single Transferable Vote : The district & seats

1 riding of 5 seats



Cambridge, Massachusetts

City Council Elections, November 8th, 2011



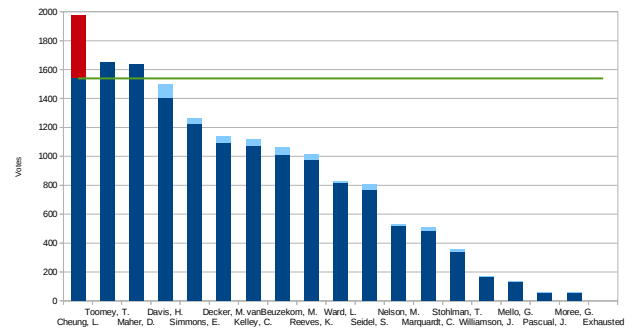
## Single Transferable Vote The algorithm

$$\text{votes required} = \left( \frac{\text{valid votes cast}}{\text{seats to fill} + 1} \right) + 1$$

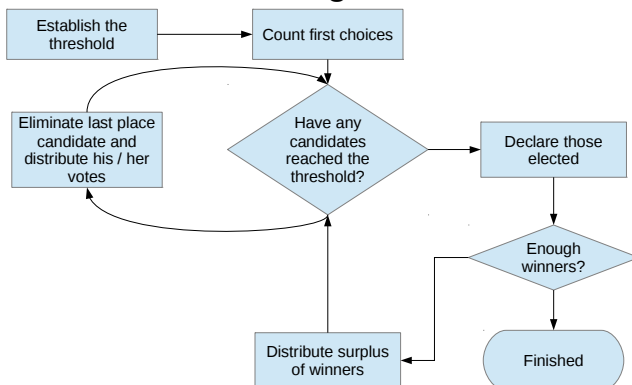
$$1540 = \left( \frac{15393}{9 + 1} \right) + 1$$

Cambridge, Massachusetts

City Council Elections, November 8th, 2011

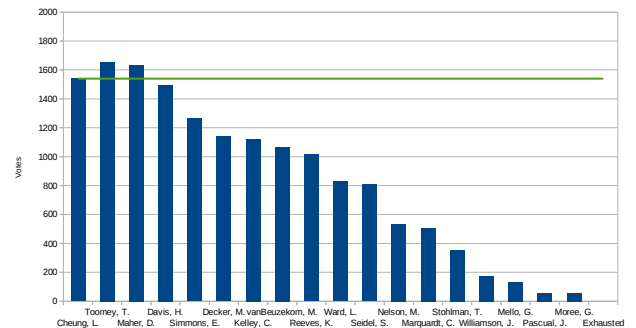


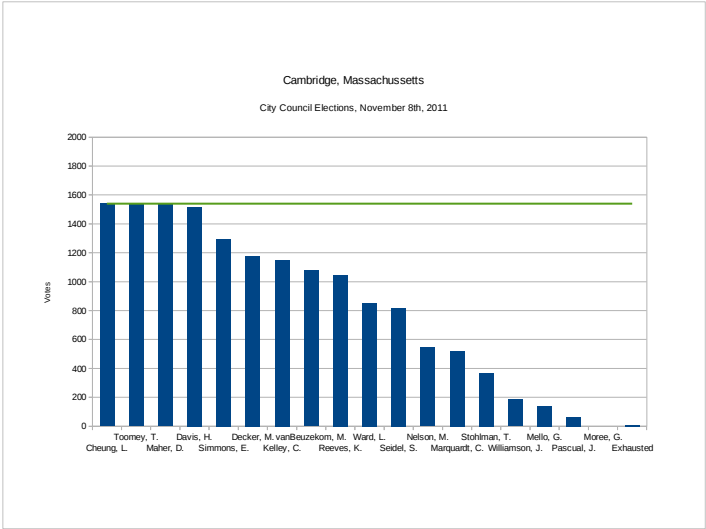
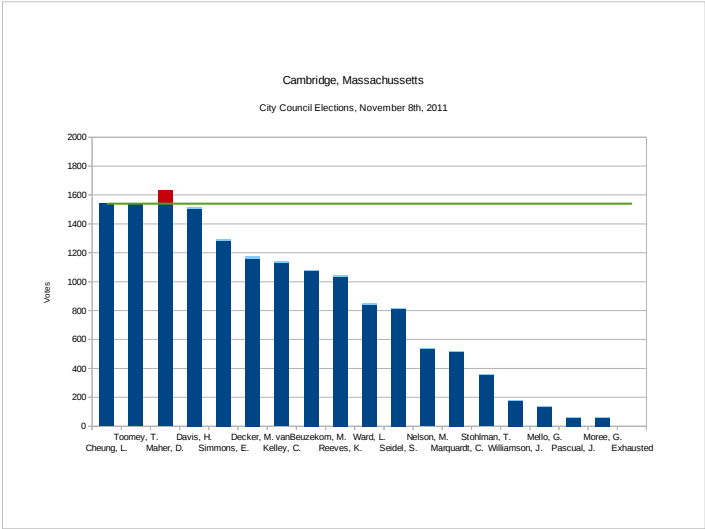
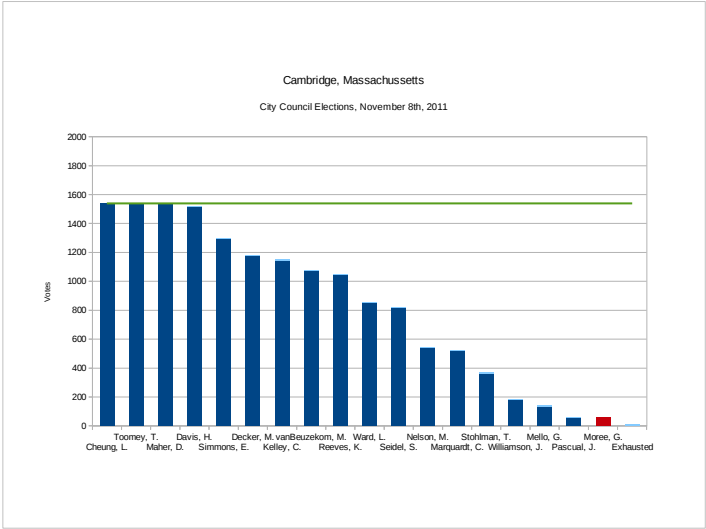
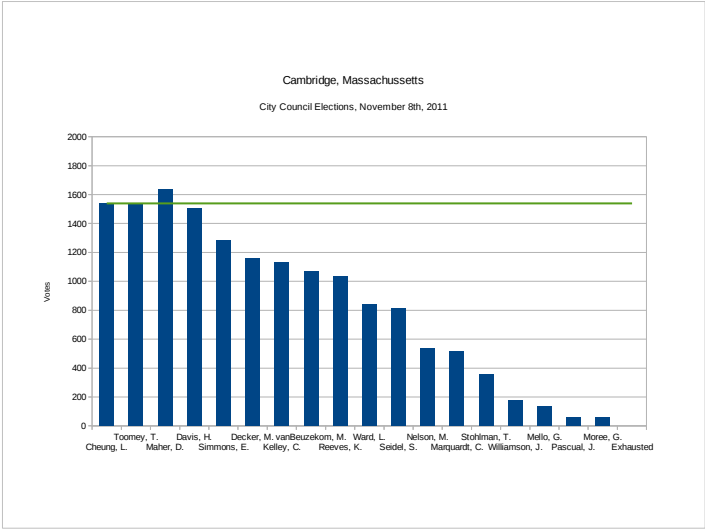
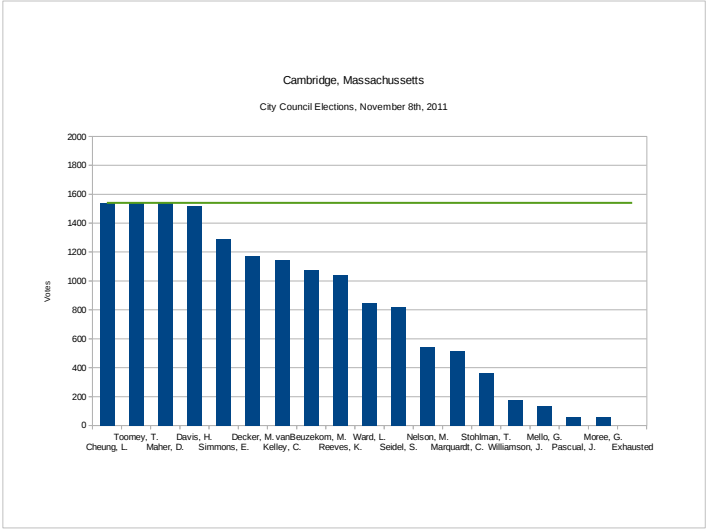
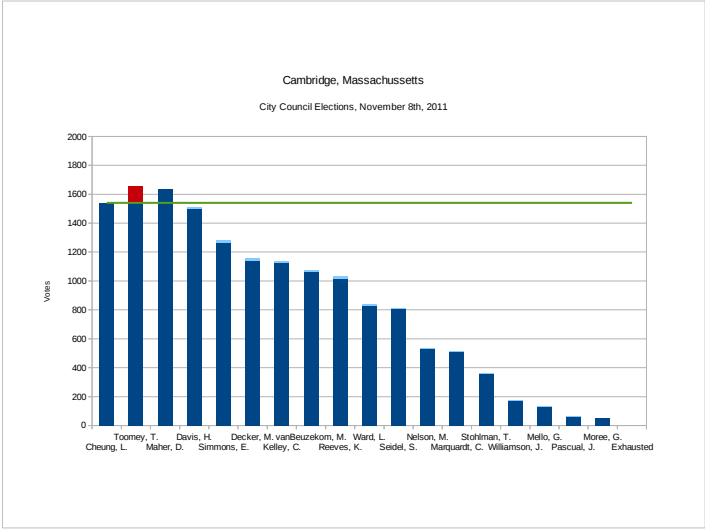
## Single Transferable Vote The algorithm

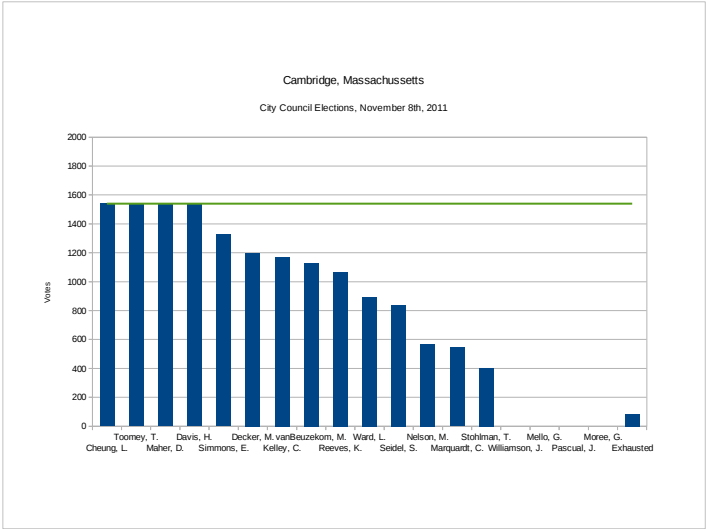
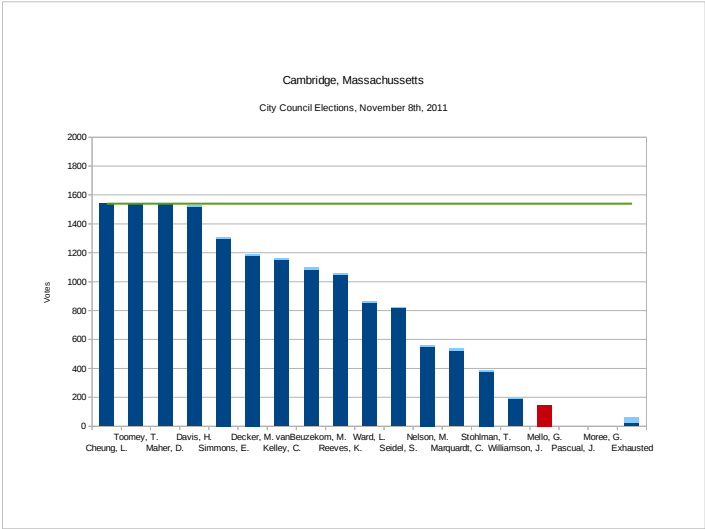
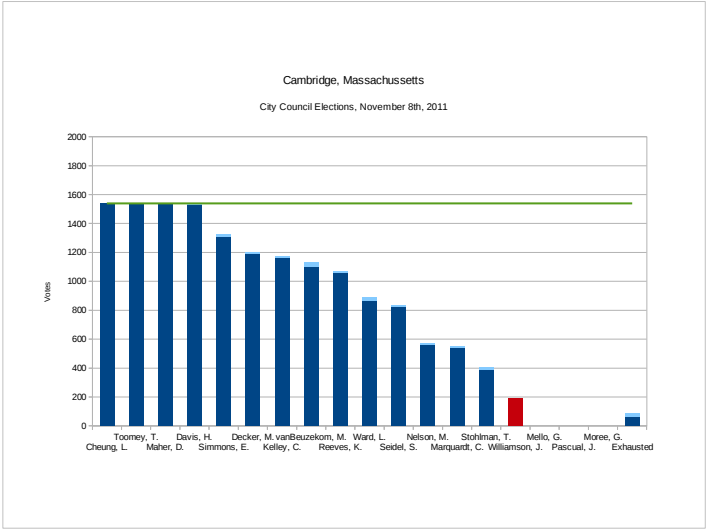
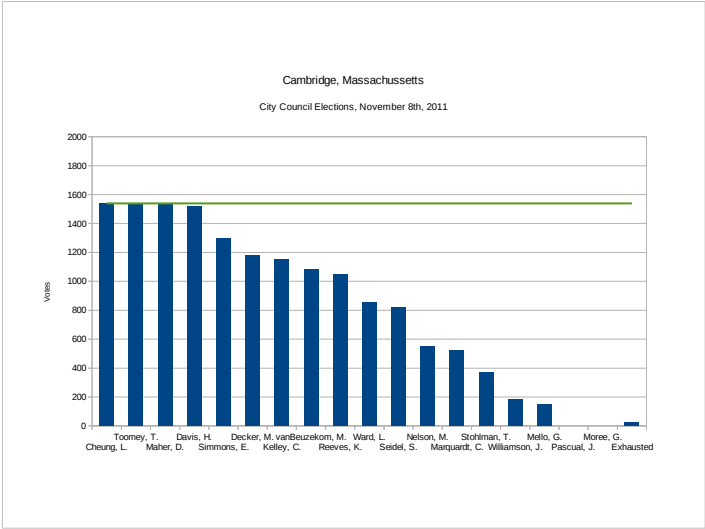
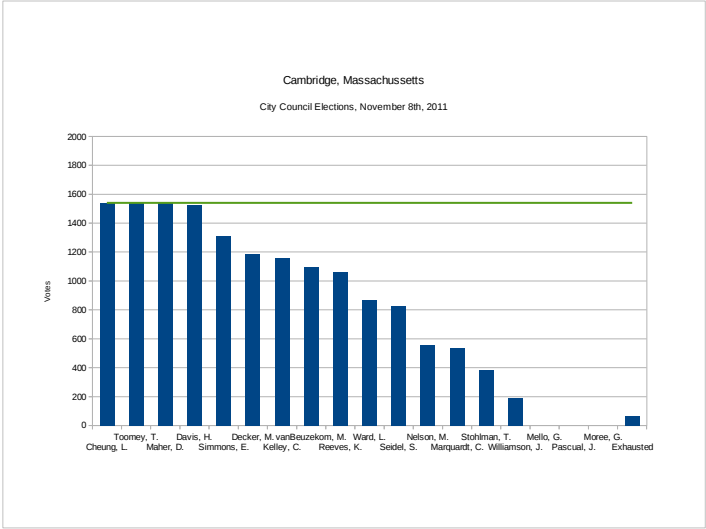
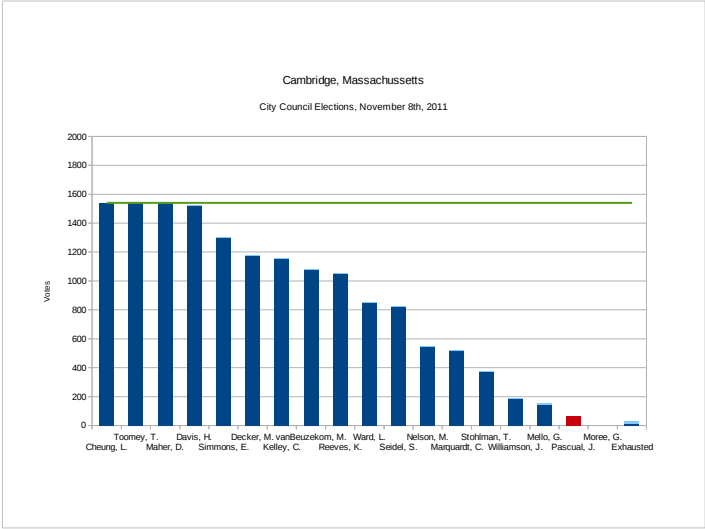


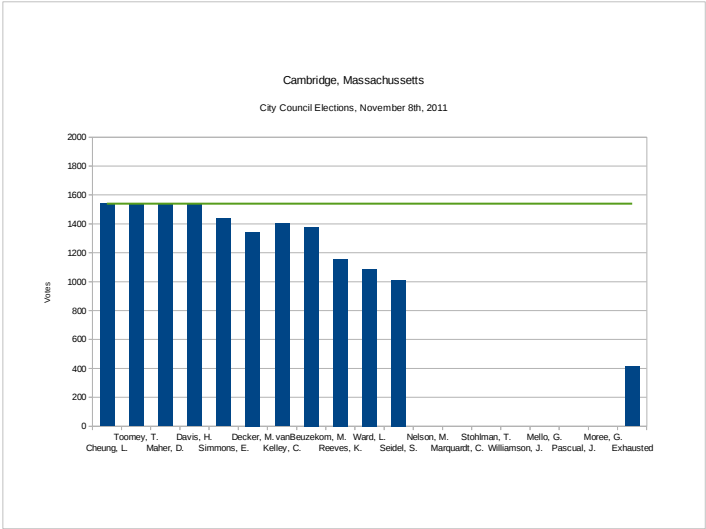
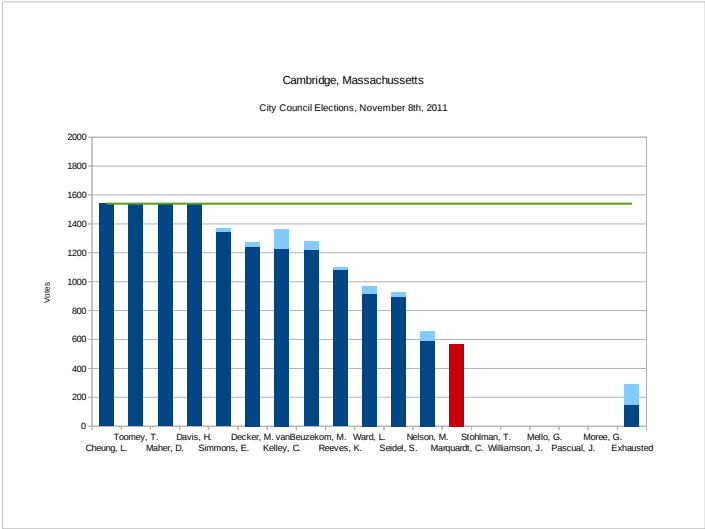
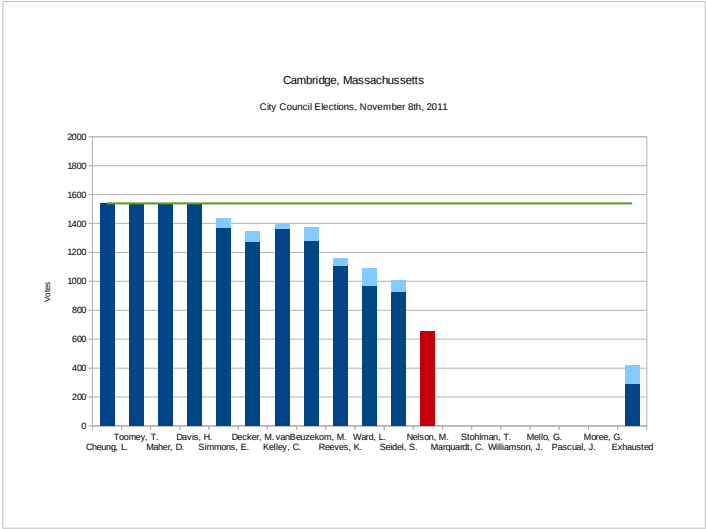
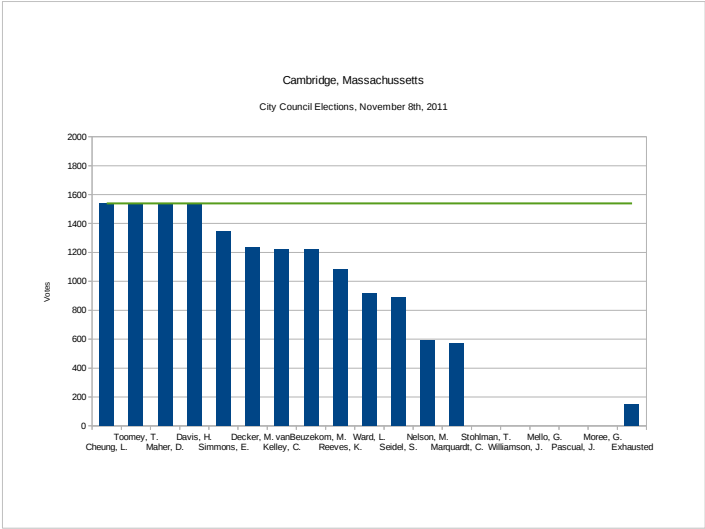
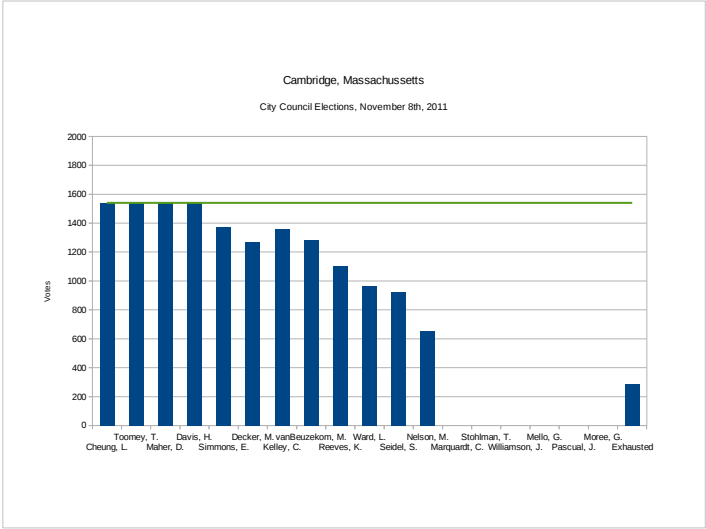
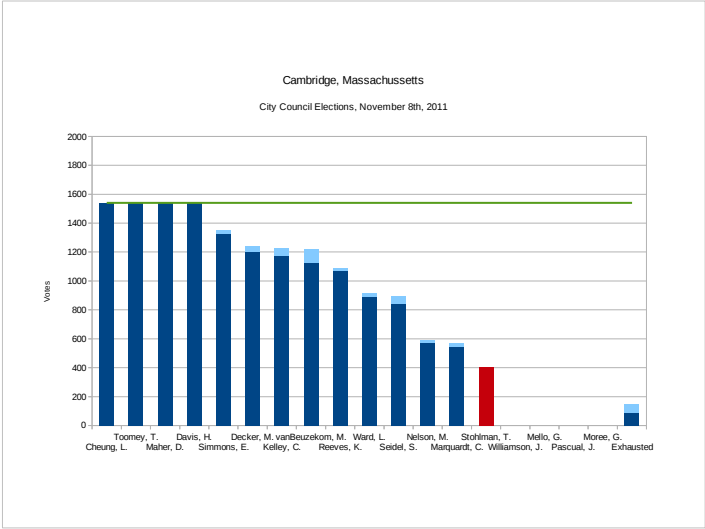
Cambridge, Massachusetts

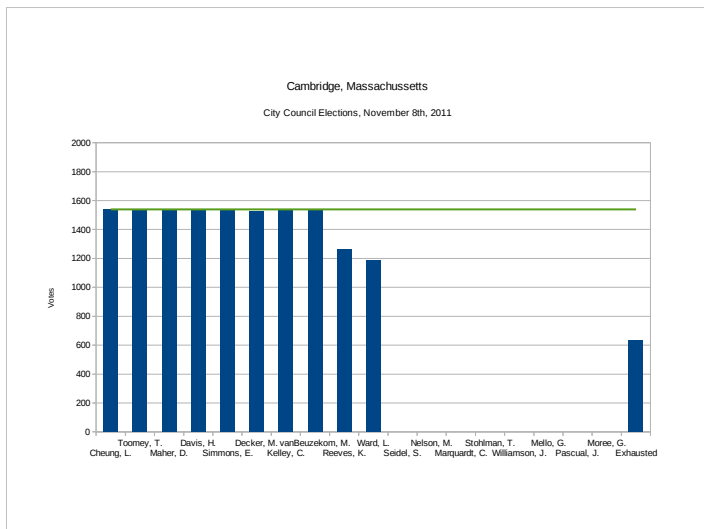
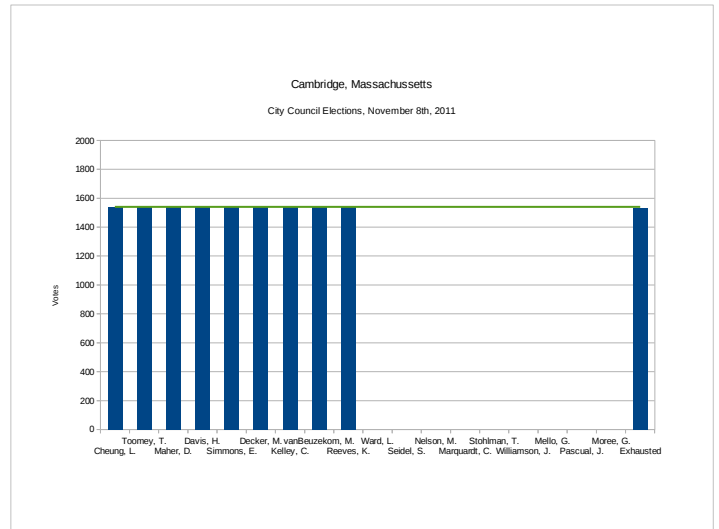
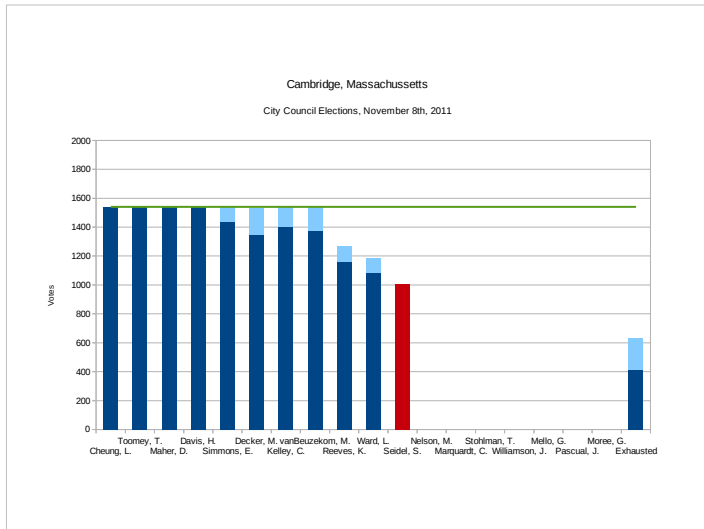
City Council Elections, November 8th, 2011





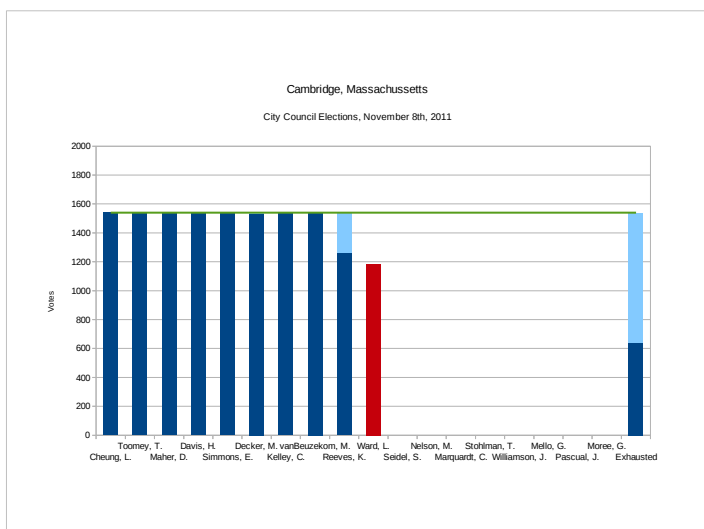






## Alternative Vote (**not** proportional)

- Also called Instant Runoff Voting
- Often thought as an stepping stone to PR
  - No jurisdiction has moved from AV to PR.
- Like STV, has a ranked ballot
- Only one seat per district
- Threshold is set to 50%



## A primer on voting systems

Questions?

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