2011 referendum options simulator

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- ▶ On 26/11/2011 an indicative referendum will be held under the Electoral Referendum Act 2010, with two questions:
    - ▶ Q1: Do you want to keep the current MMP system?
    - ▶ Q2: If NZ decides to change from MMP, which of the following would you prefer most? First Past the Post (FPP); Preferential Vote (PV); Single Transferable Vote (STV); Supplementary Member (SM).
- ▶ If Q1 is approved by majority, a review of MMP will be undertaken in 2012, with some minimum terms of reference already specified. If Q1 is not approved, Parliament will consider a possible referendum on a change to the plurality winner of Q2, by 2014.
- ▶ http://www.referendum.org.nz/ contains much information about the various systems, much of it purely qualitative.

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- ► No changes to Maori or South Island electorate seat distribution principles.
- ► SM will have 90 electorate and 30 list seats.
- ► (not a hard constraint) Under STV, "It is likely the 120 MPs would be divided between 24 and 30 electorates, each with 3 to 7 MPs."

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- ▶ We decided to allow the public to investigate these claims quantitatively.
- ▶ Aim to improve level of public discussion, and avoid what happened in UK this year in their FPP vs PV referendum.
- ▶ We chose a web-based calculator in order to maximize the potential audience.

Basic features of the simulator

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- ▶ Calculator outputs seat distributions in a 120-seat Parliament for each party under each of the 5 systems.
- ▶ For MMP, user can also adjust the threshold (default 5%) and whether threshold is waived for electorate winners (default yes).
- ▶ Important: no electorate- or candidate-specific information is part of the input.

Challenge: voter behaviour?

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  - ▶ possibly depending on the electoral system
- ▶ Our simulator avoids this part by leaving most of it up to the user.

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- The way this done affects the result for all the systems except MMP.

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▶ There is some evidence that this is reasonable, at least for MMP elections:

National Party	1999	2008
Total party vote	629932	1053398
comprising:		
Mangere	0.45%	0.39%
Mt. Albert	1.08%	1.18%
Nelson	1.50%	1.46%
Clutha-Southland	2.04%	1.92%

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  - 90 electorates for SM;
  - 24–30 electorates for STV.
- NZ currently has 70 electorates: 63 general and 7 Maori.
- We need to be able to disaggregate the 2008 party vote into our new electorates, for downscaling purposes.

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  - ▶ It's a lot of work! (5604 polling places, counting multiplicities).
  - ▶ Ca. 20% of votes are not traceable to a polling place, but only to an electorate. (Advance votes, special votes, overseas votes, etc.)
- ▶ Instead: define each new electorate as a convex combination of contiguous 2008 electorates.
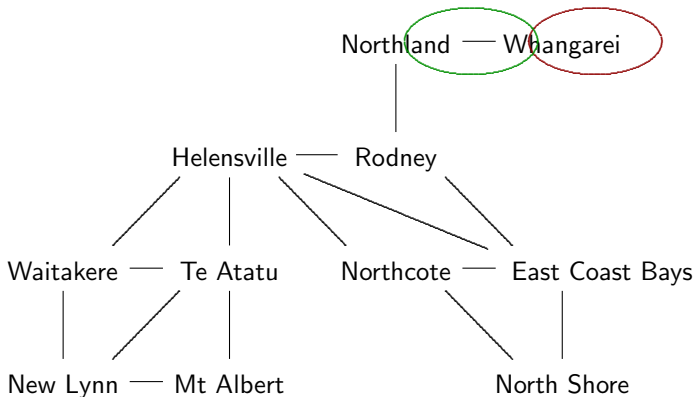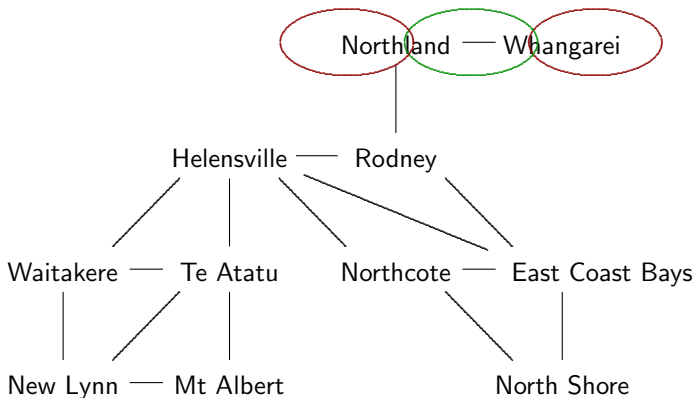
Turn 70 old electorates into 120 new ones:
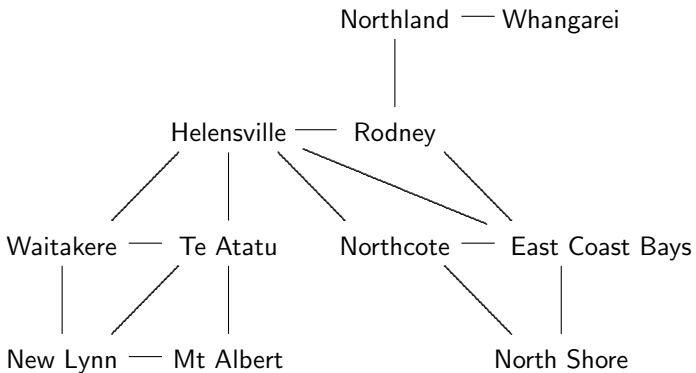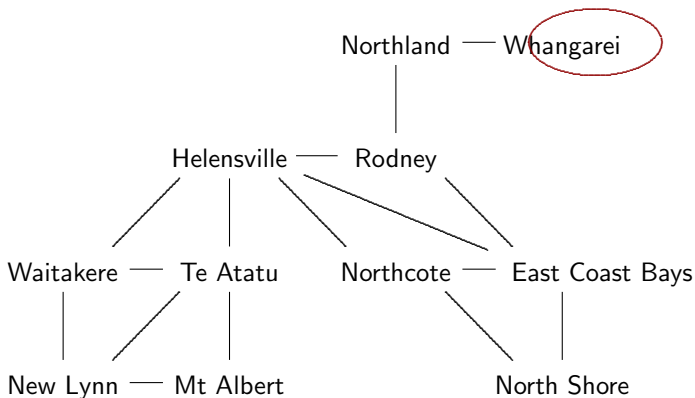
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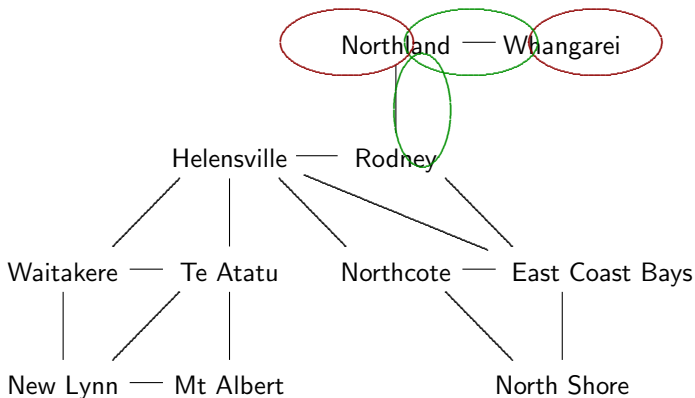
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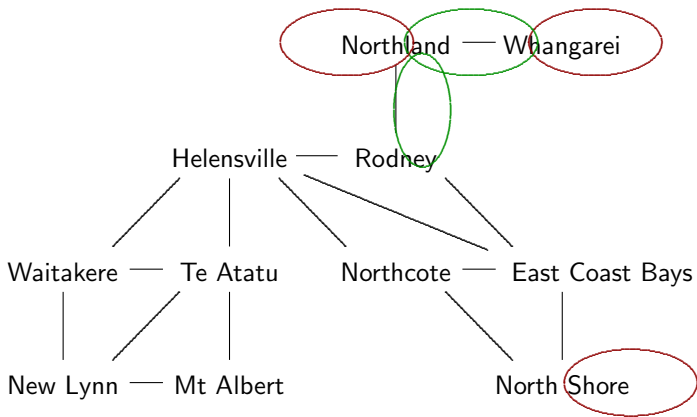
(The new electorates are 7/12 the size of the old ones.)

Challenge: preference-order votes

- For PV and STV we must infer voter preference orders over candidates, given only the voter's first choice.
- Asking the user to enter preference orders leads to an infeasible burden of data entry.

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- ▶ We have separate collections of preference orders for the general and Maori rolls.

Challenge: STV

- ▶ The precise form of STV is not specified, and neither is the number of electorates nor the number of winners per electorate. Neither is the method of reallocating votes to other candidates.

STV multi-member electorates

- We used 30 electorates, with between 3 and 7 seats per electorate.
  - Rural/provincial areas have 3- or 4-seat electorates.
  - Two 7-seat electorates (Auckland Central and Wellington).

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- Meek's method is already used for some local elections in NZ, but not elsewhere.
- We use Wright's method.

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- ▶ Above-the-line ballots are then converted into candidate preference orders by replacing each party name with a standard list of the party's candidates.
- ▶ Typically, most voters vote above the line, as it is simpler.
- ▶ Since we are not using candidate-specific information, we assume 100% above-the-line voting.

Results: recent poll

One News/Colmar Brunton poll 21/8/2011:

	Vote	MMP	FPP	PV	STV	SM
National	56%	70	101	98	71	95
Labour	30%	37	19	22	45	21
Green	6.0%	7	0	0	1	2
NZF	2.3%	0	0	0	0	1
ACT	1.7%	2	0	0	0	1
Maori	1.4%	2	0	0	3	0
United	0.5%	1	0	0	0	0
Mana	0.9%	1	0	0	0	0
Total seats		120	120	120	120	120

(MMP electorate seats: Maori 2; ACT, United, Mana 1 each.)

Results: 2008 party vote

	Vote	MMP	FPP	PV	STV	SM
National	44.93%	58	82	76	64	75
Labour	33.99%	43	38	44	50	40
Green	6.72%	9	0	0	1	2
NZF	4.07%	0	0	0	0	1
ACT	3.65%	5	0	0	0	1
Maori	2.39%	5	0	0	5	1
United	0.87%	1	0	0	0	0
Progressive	0.91%	1	0	0	0	0
Total seats		122	120	120	120	120

(MMP electorate seats: Maori 5; ACT, United, Progressive 1 each.)

NZES hypothetical FPP vote

The 2008 NZES survey also included a question:

Imagine that the 2008 election had been held under the old first past the post system, and you had only ONE vote for one of the candidates who stood in your electorate. Which party's candidate would you have voted for?

Results: 2008 hypothetical FPP vote

	Vote	FPP	SM
National	44.8%	76	70
Labour	37.6%	37	40
Green	3.5%	0	1
NZF	2.5%	0	1
ACT	0.7%	0	0
Maori	5.0%	7	8
United	0.4%	0	0
Progressive	0.6%	0	0
Total seats		120	120

(For SM, we use the same vote-shares for both votes.)

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- (Electoral Referendum Act)
  www.legislation.govt.nz/act/public/2010/0139/latest/
  DLM2833647.html#DLM2833647

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- ▶ (NZES results) nzes.org/exec/show/2008_NZES+Results

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- ▶ (NZES results) nzes.org/exec/show/2008_NZES+Results
- ▶ (Party vs electorate vote data)
  2008.electionresults.govt.nz/electionresults_2008/elect-
  splitvote-35.html