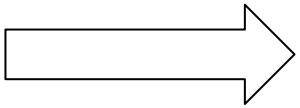
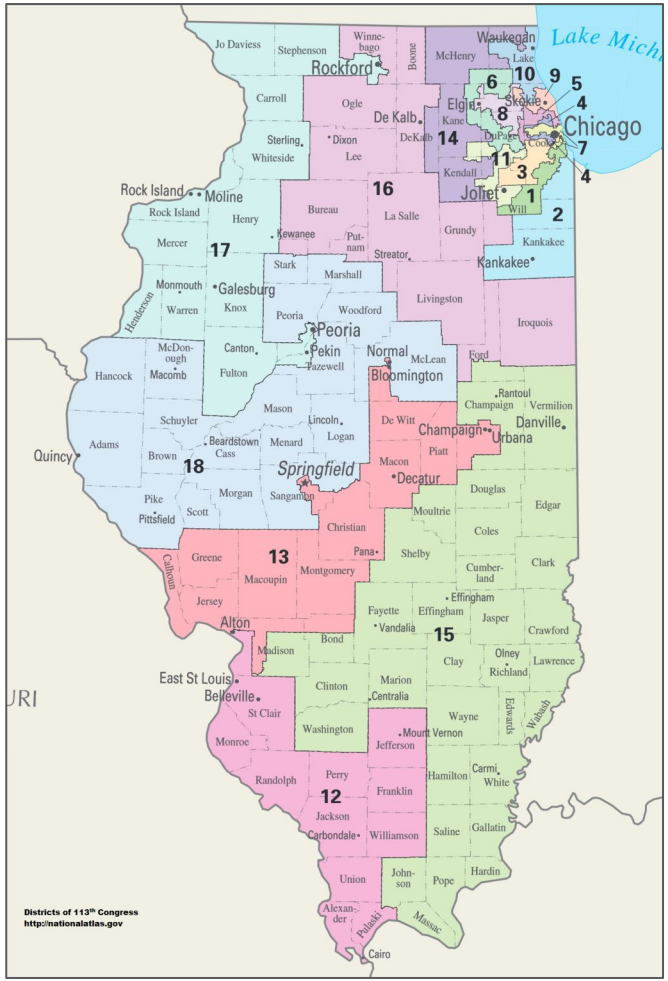
county-aware redistricting

gabe schoenbach
mggg redistricting lab | tufts university | oct. 2021

background



what is redistricting?



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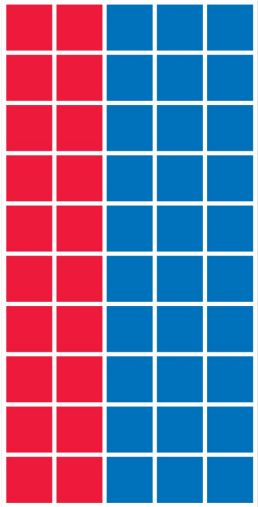
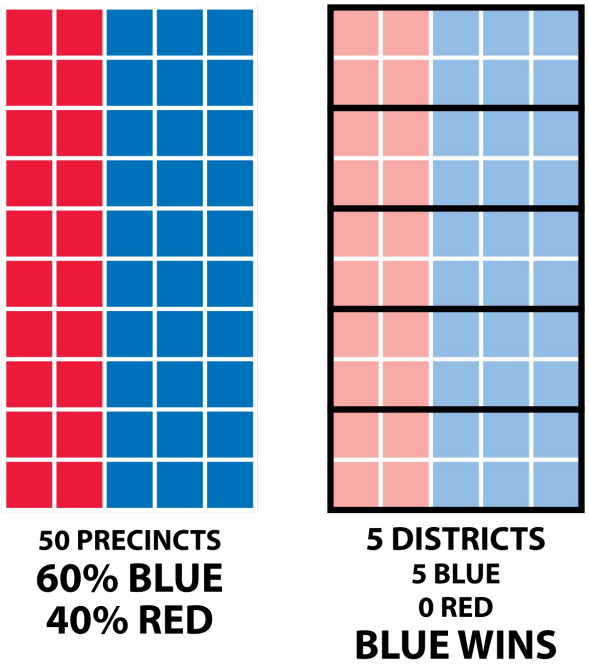


50 PRECINCTS
60% BLUE
40% RED

what is redistricting?



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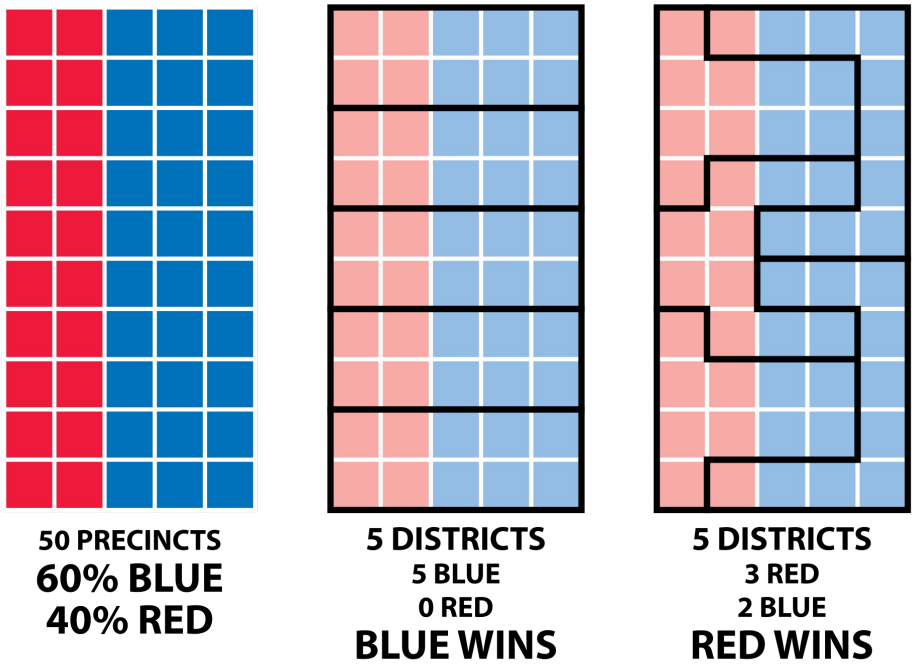

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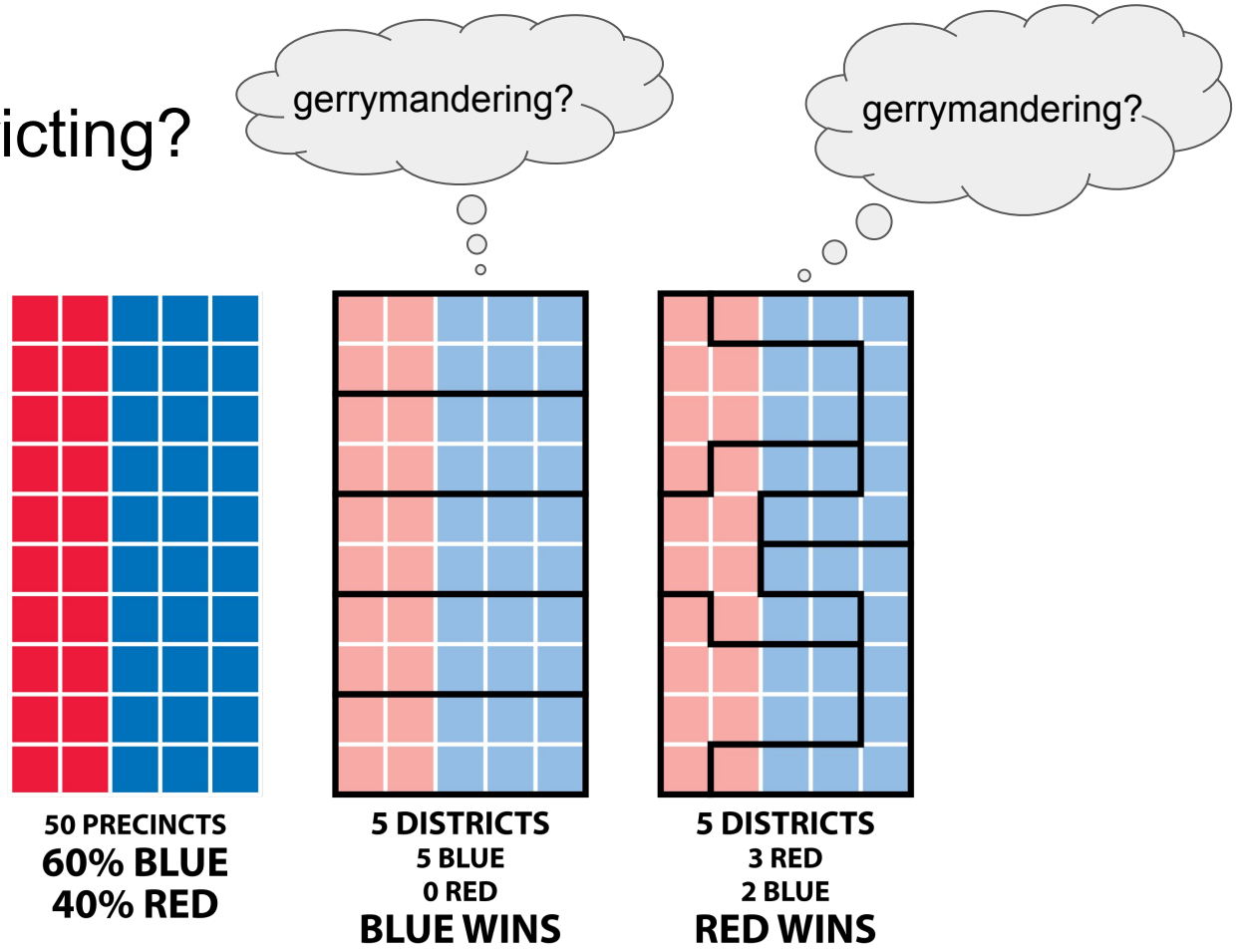
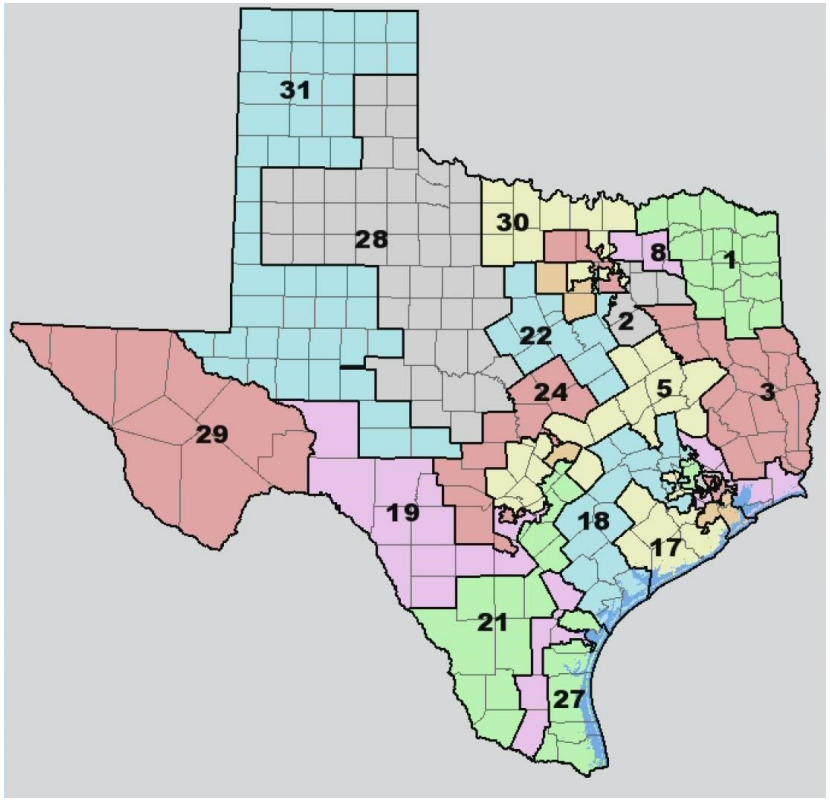


ensemble analysis — putting plans in context



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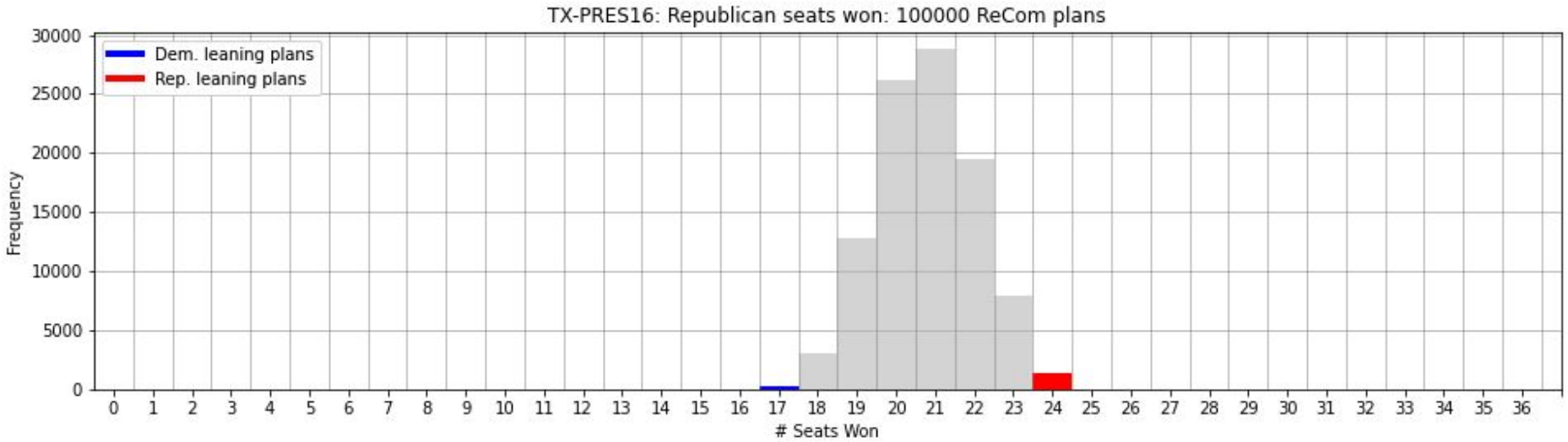

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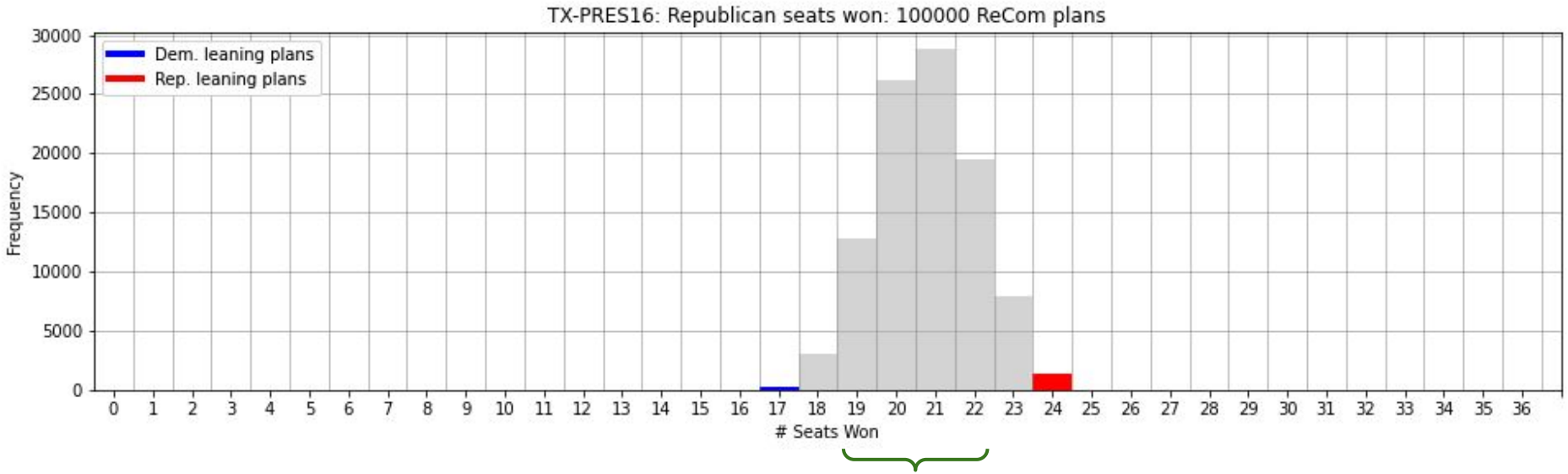

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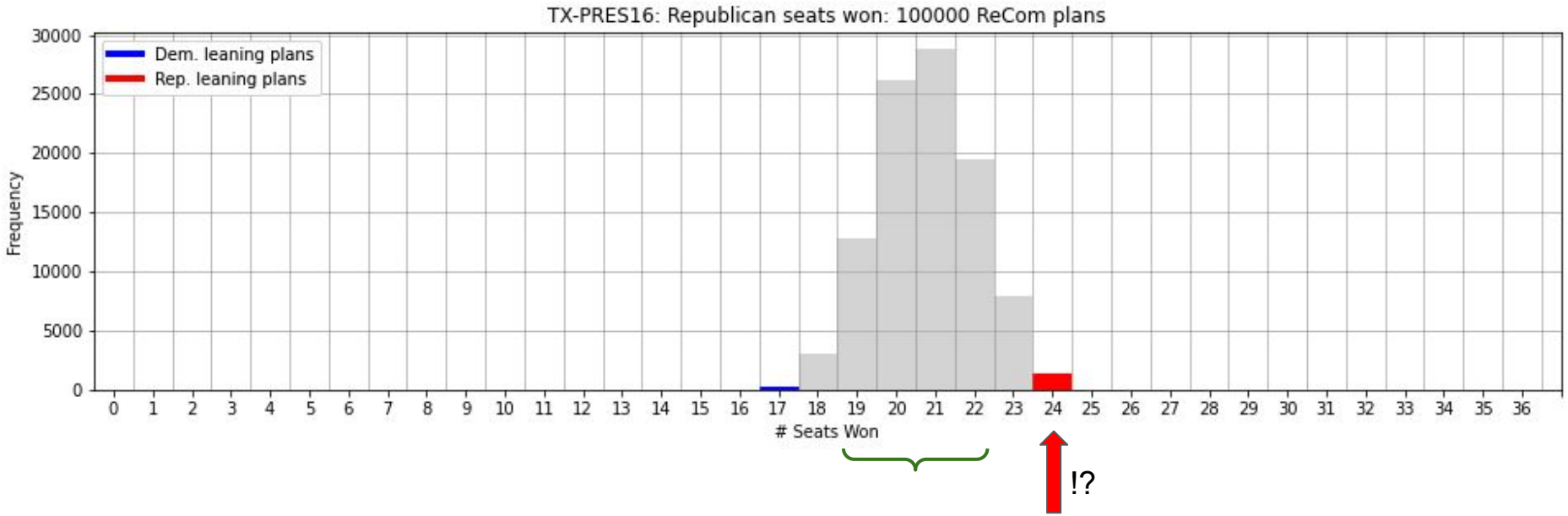

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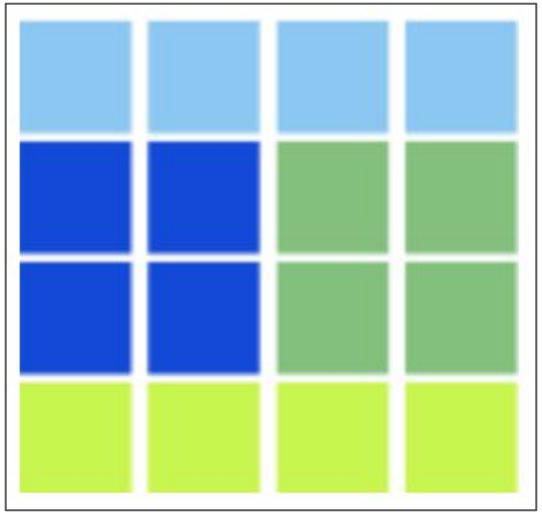

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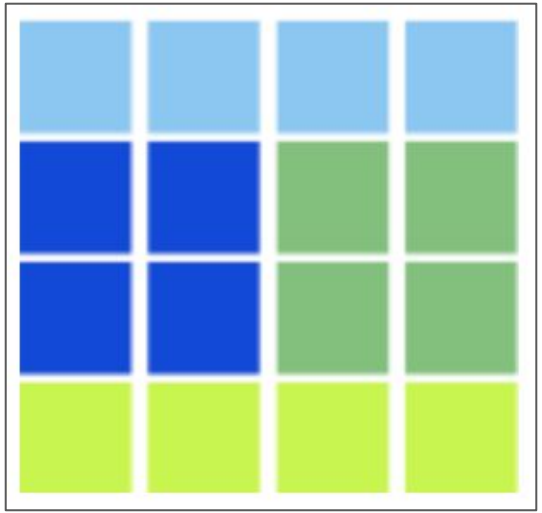

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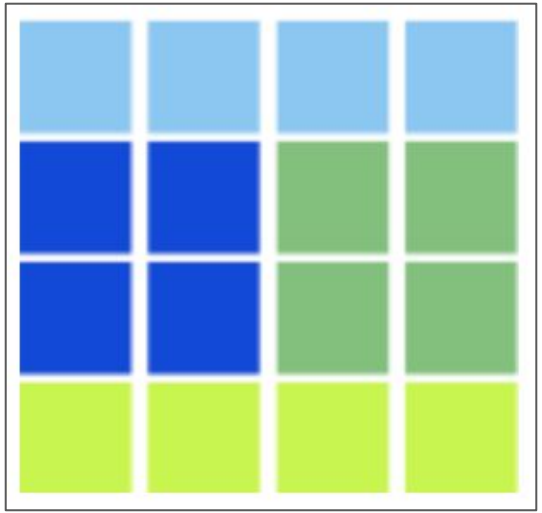

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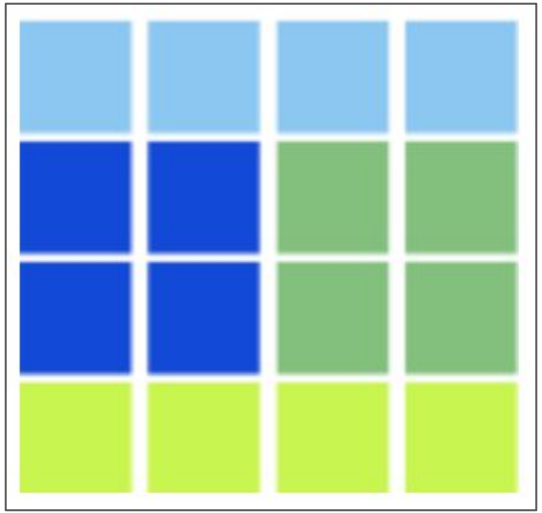

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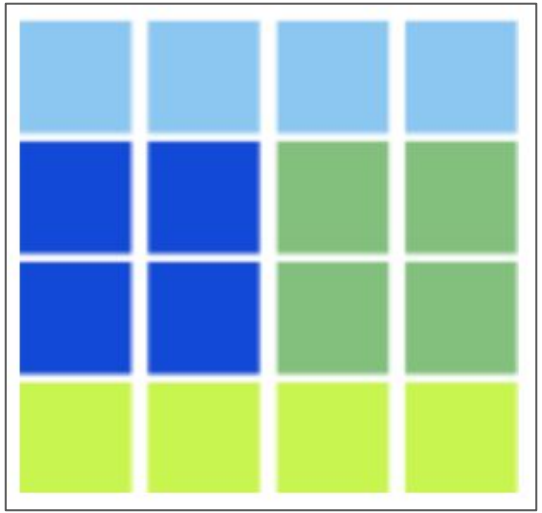

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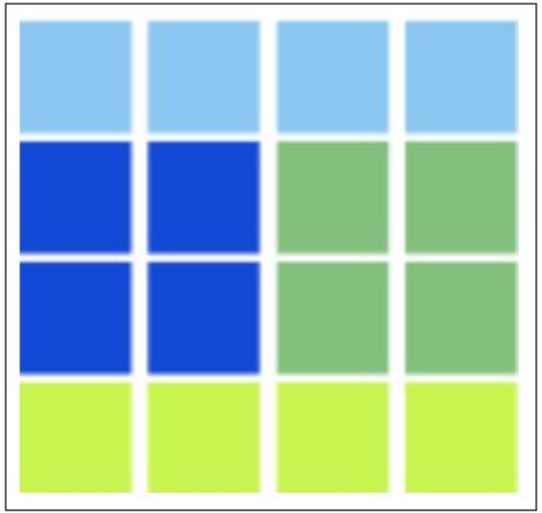

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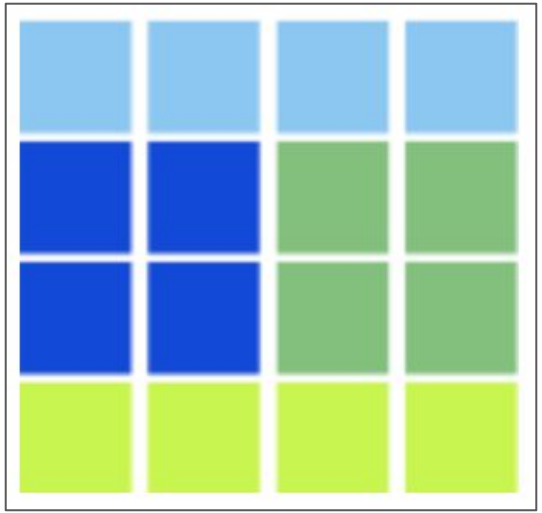

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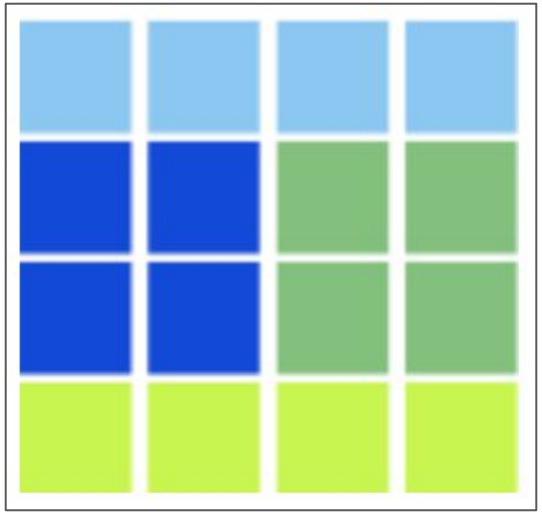
- Iowa (building blocks: counties)



- Everywhere else (building blocks: Census blocks)

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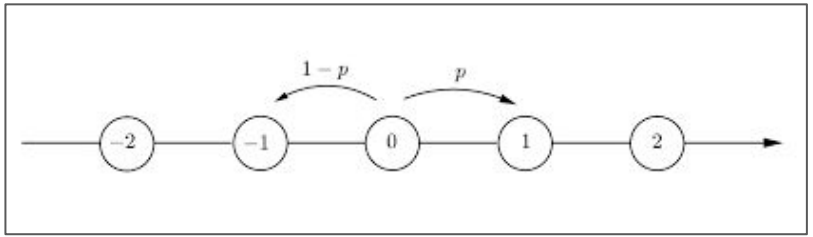

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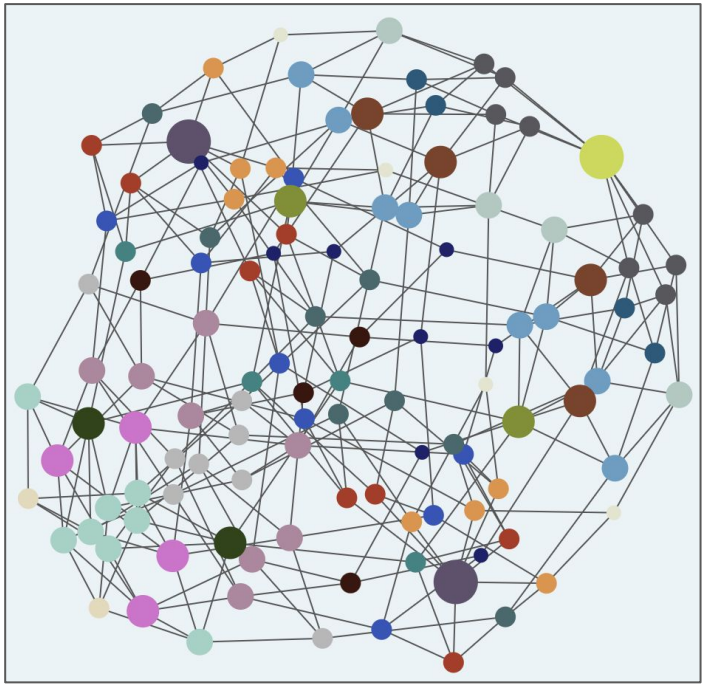

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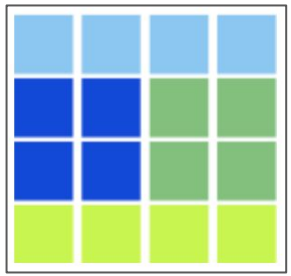
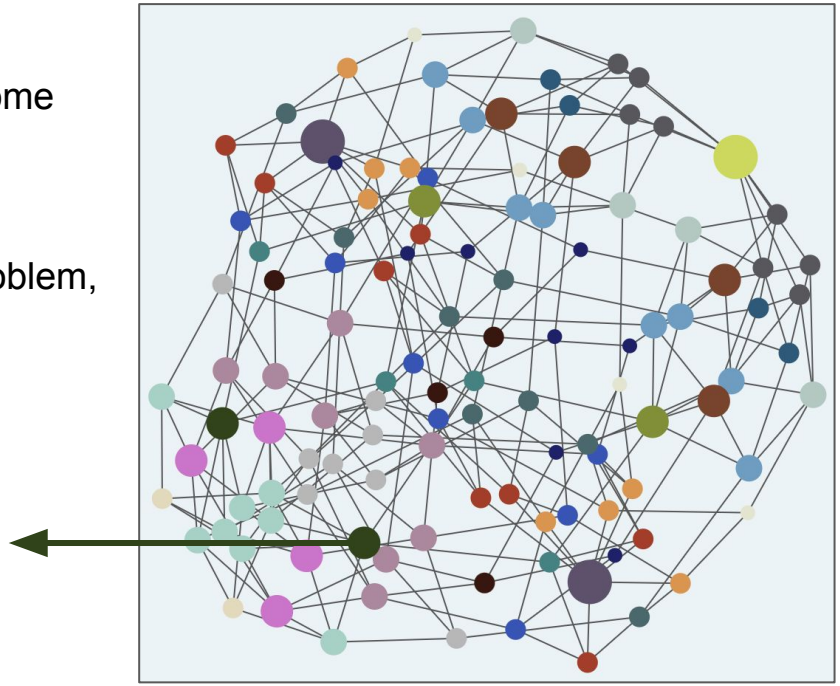
- **metagraph**: the state space for our redistricting problem, where each node is a plan





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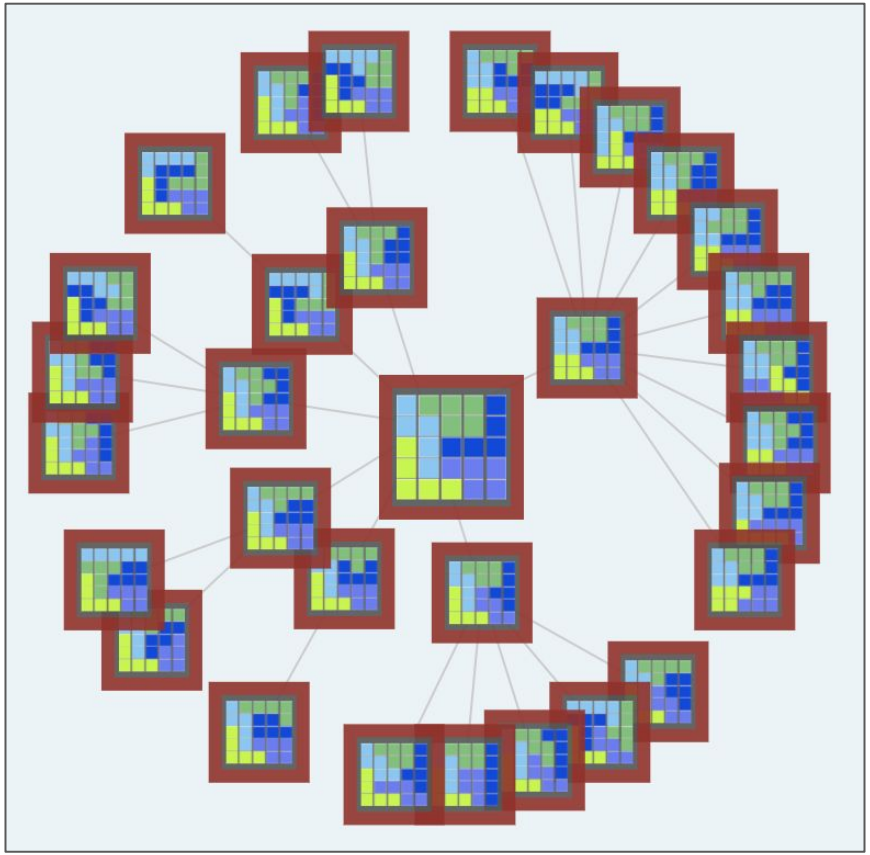
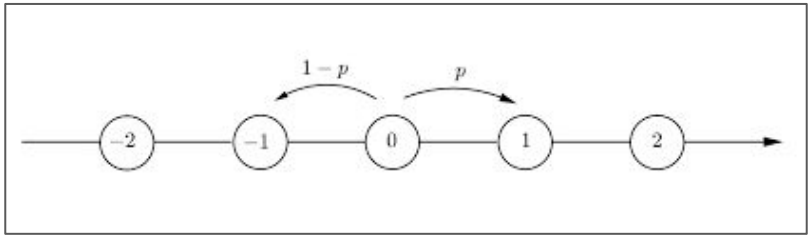


how do we transition from one plan to another?



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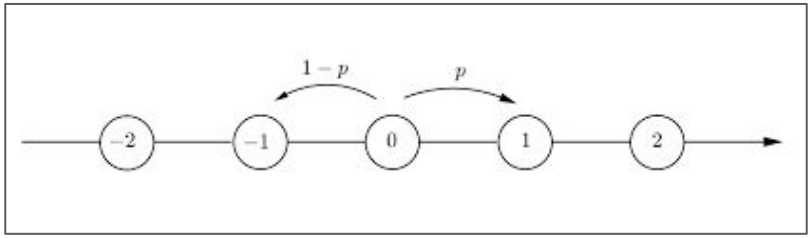
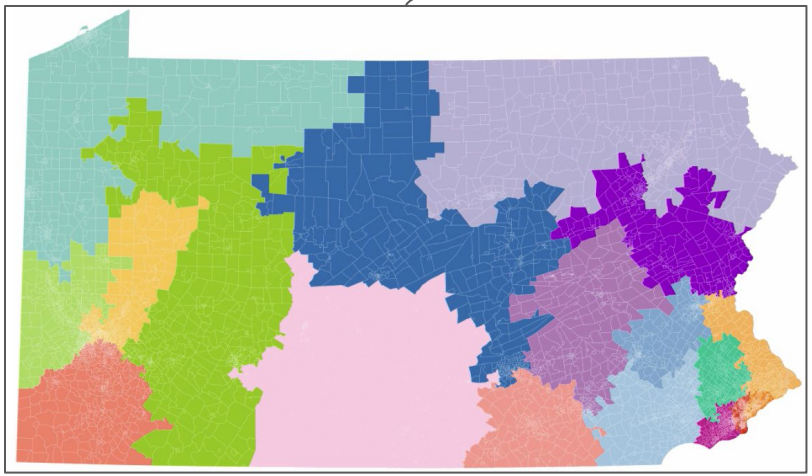
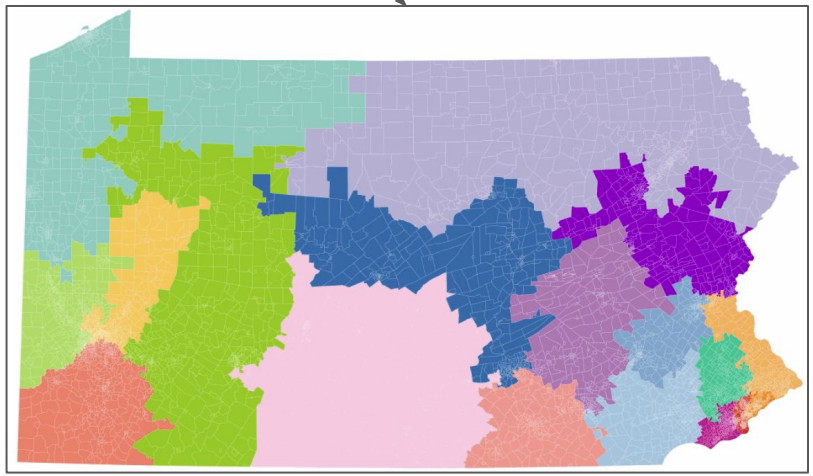


ReCom

p





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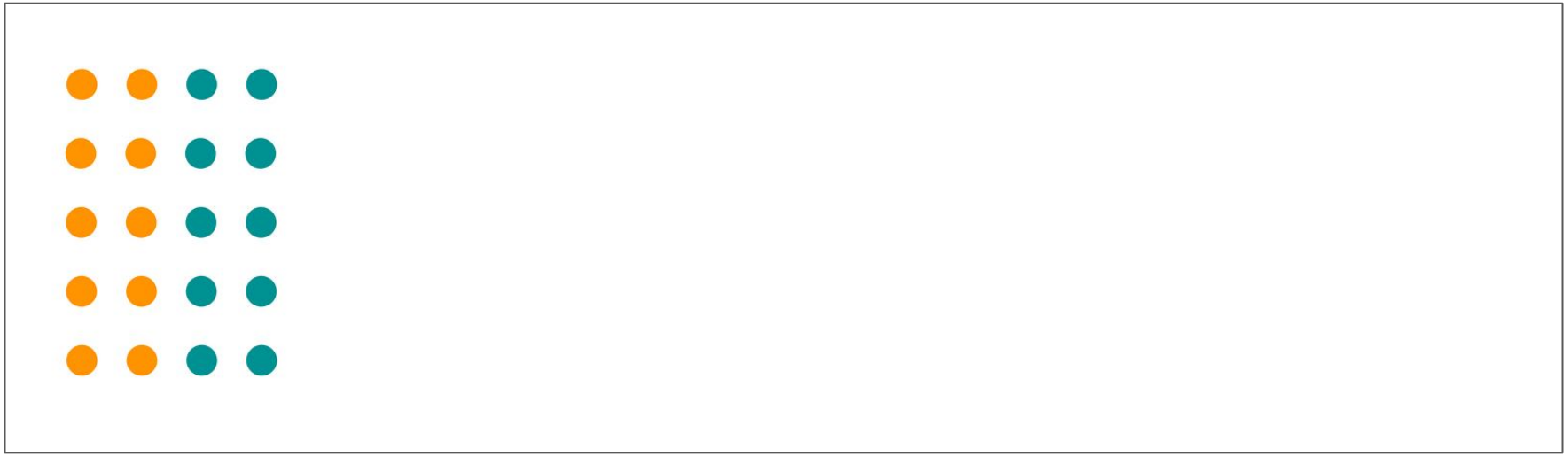

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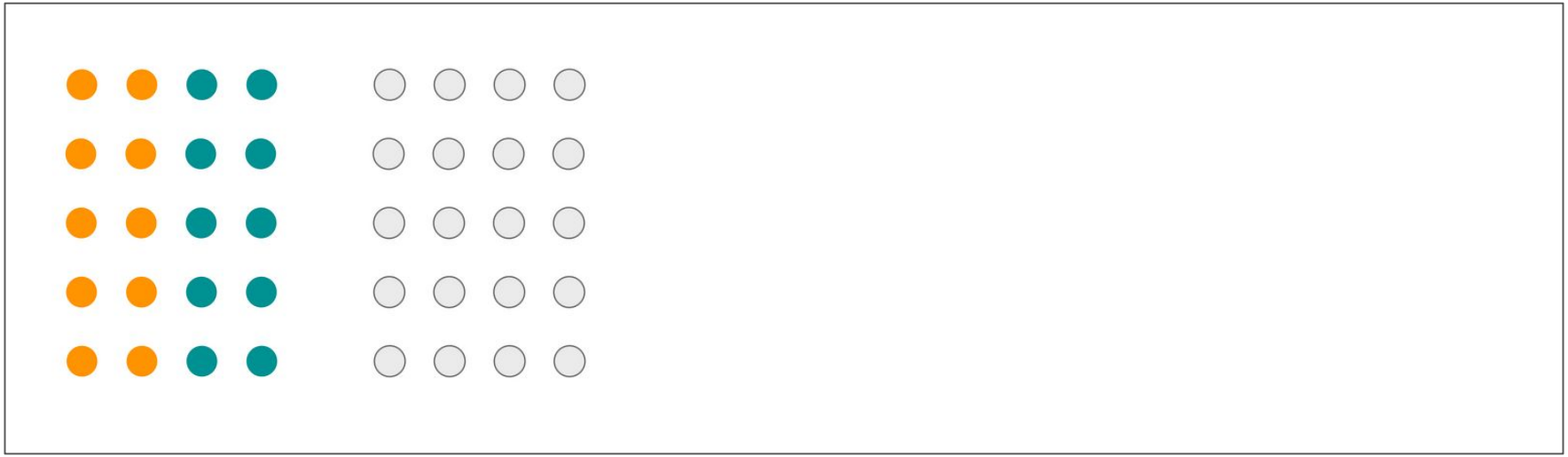

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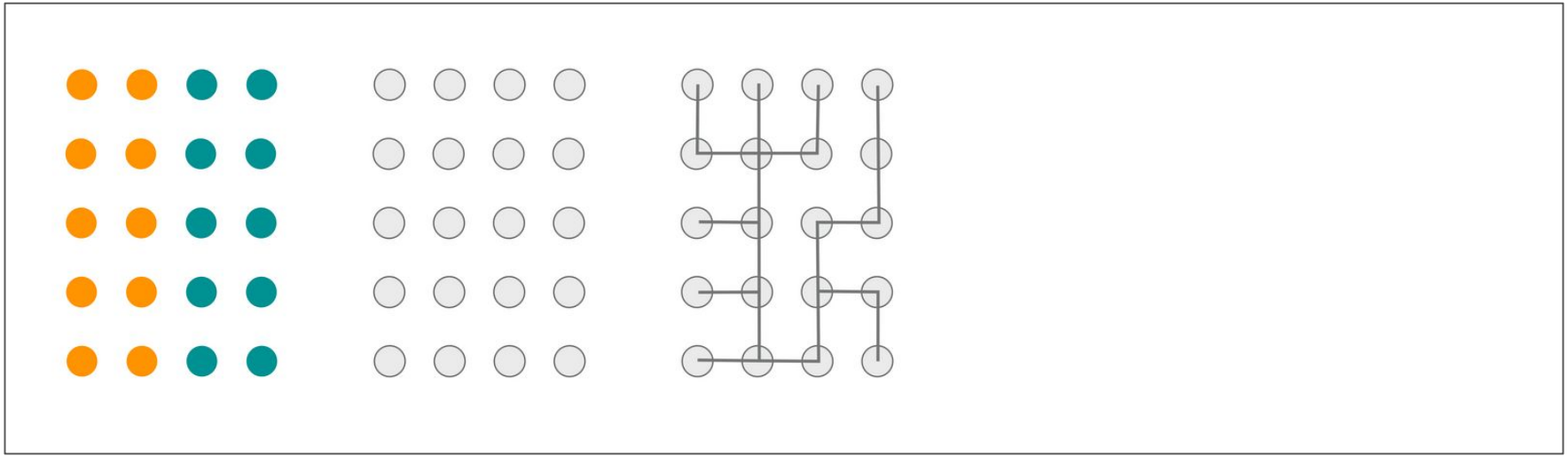

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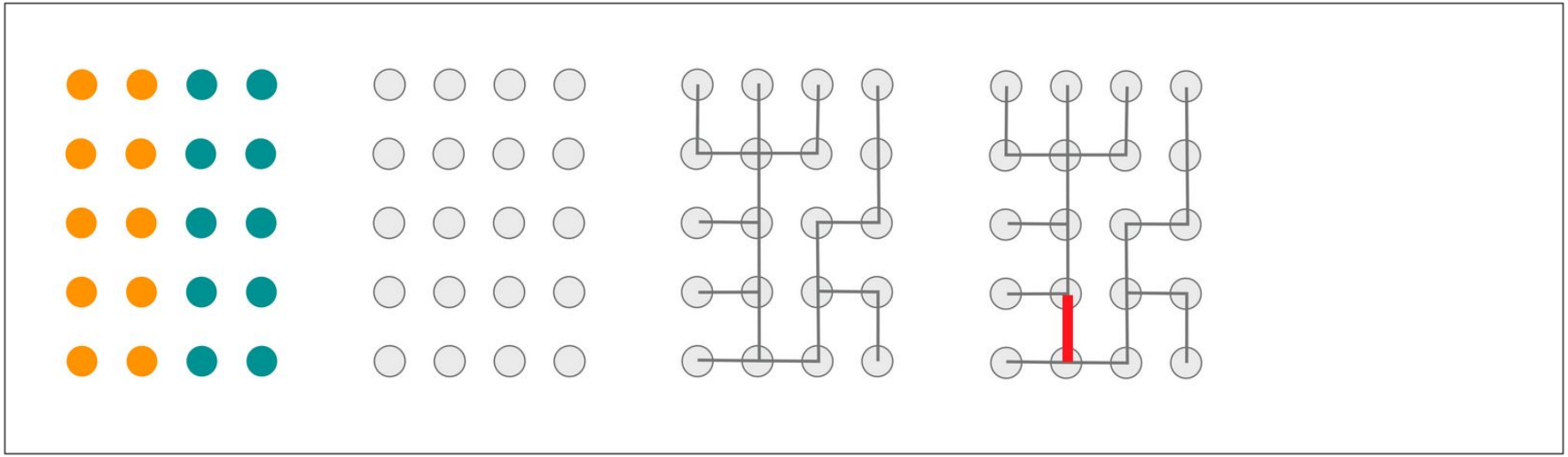

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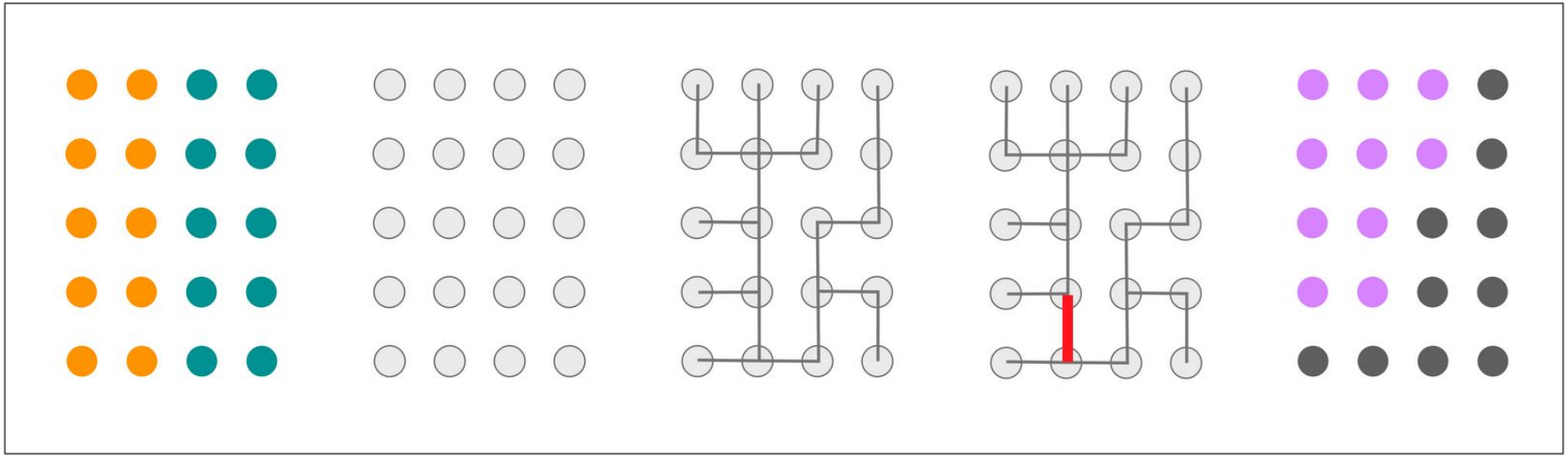
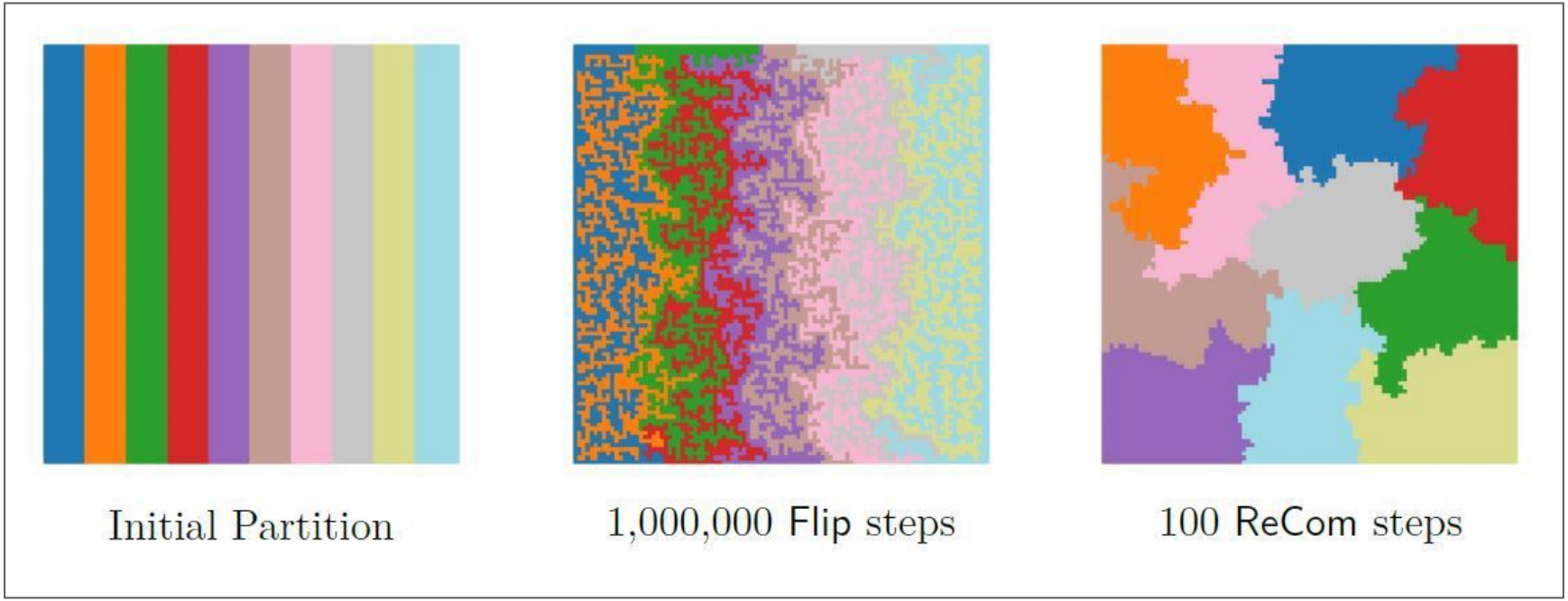


what is our “target” distribution? Not uniform sampling!

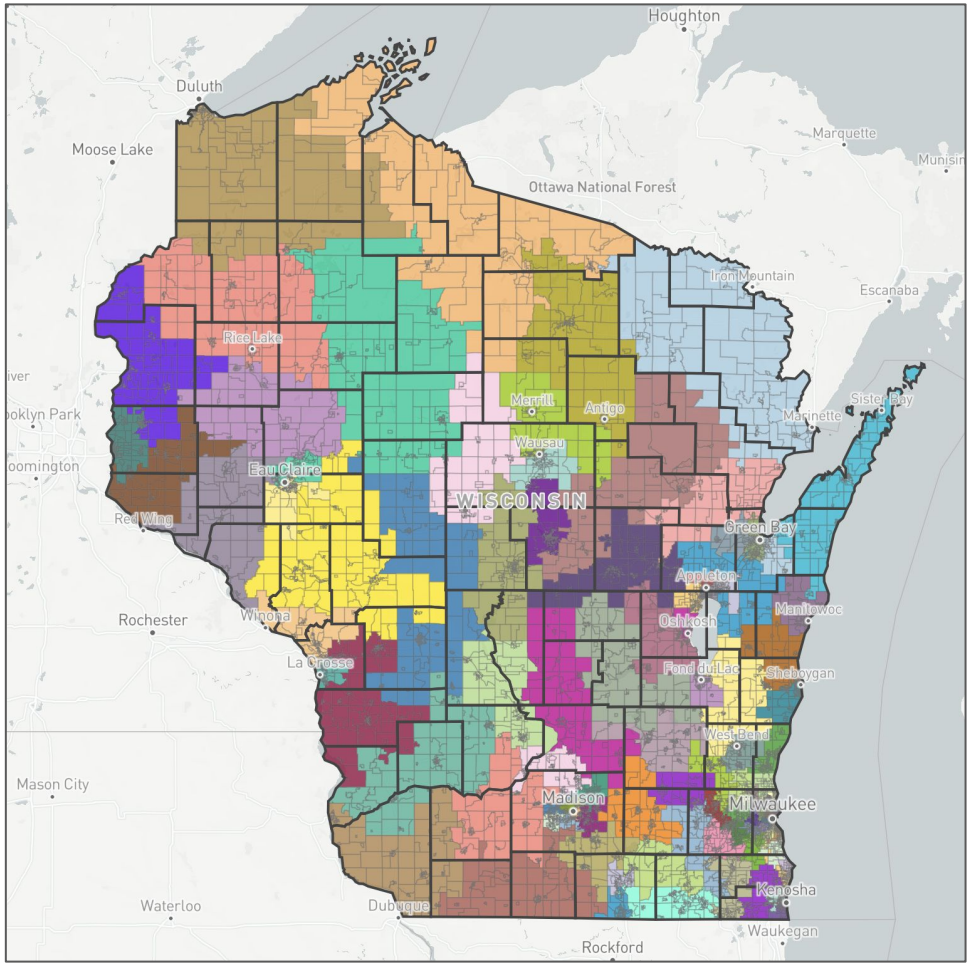


Initial Partition

1,000,000 Flip steps

100 ReCom steps

adding county awareness



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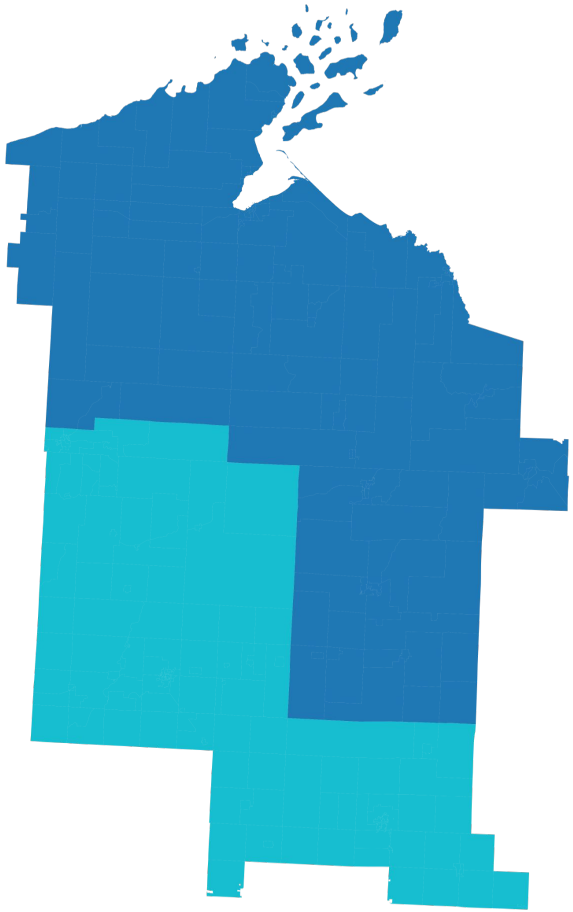

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normal ReCom:

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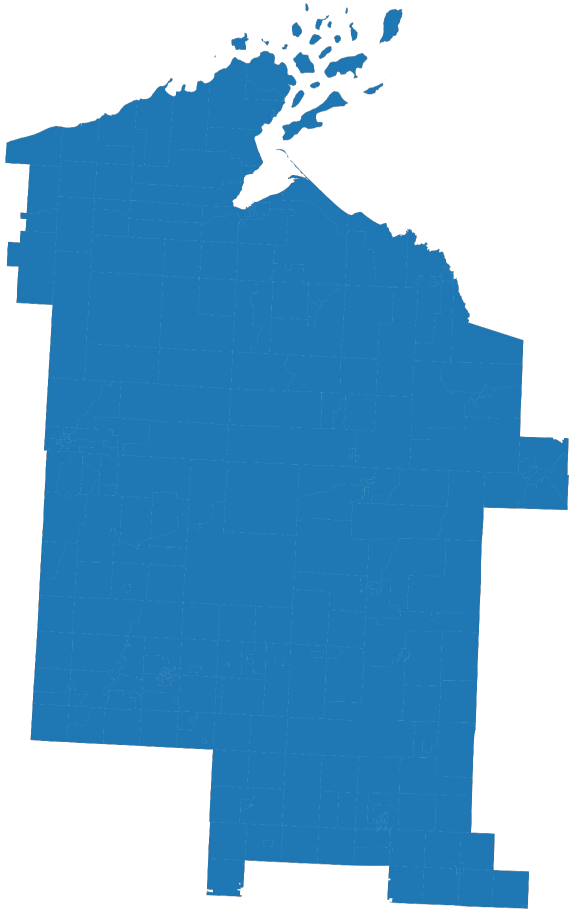

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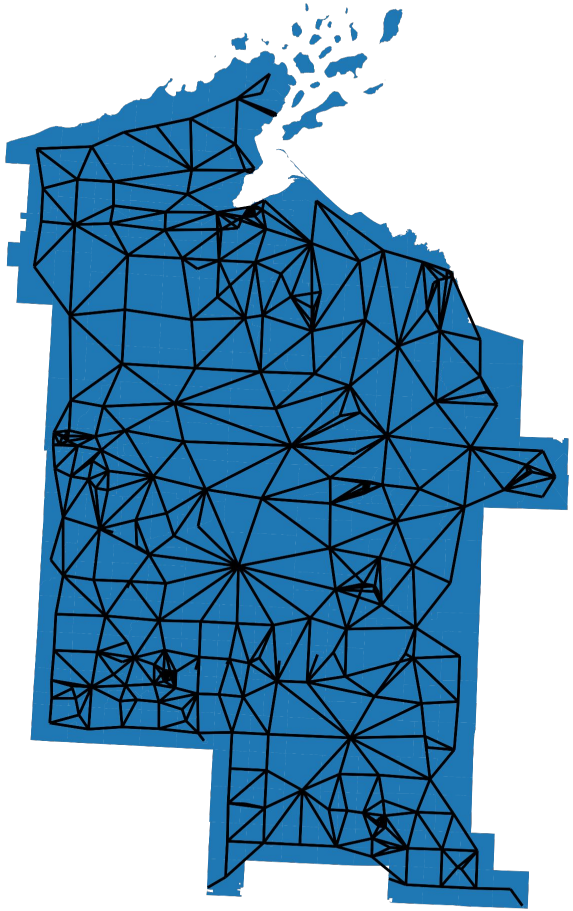

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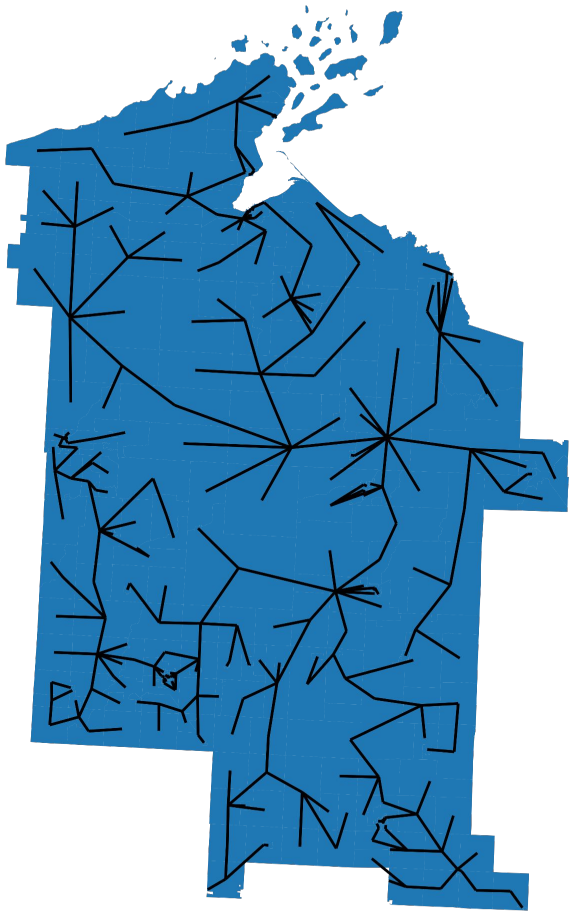

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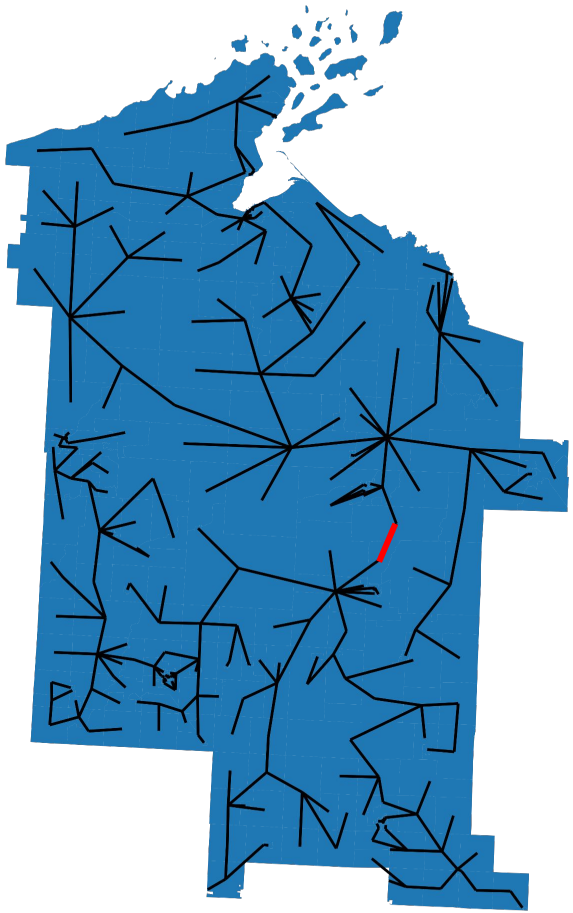

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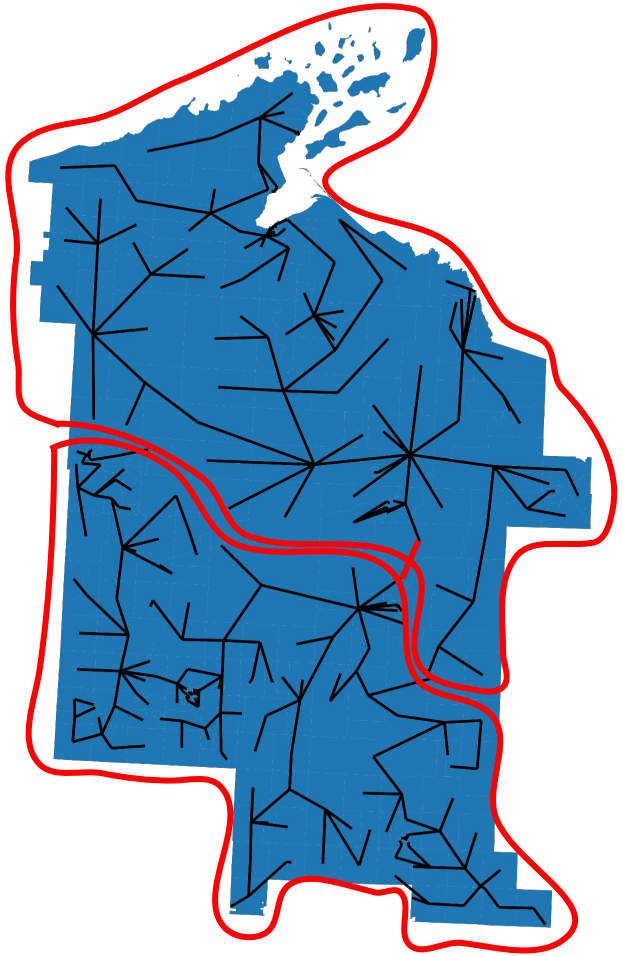

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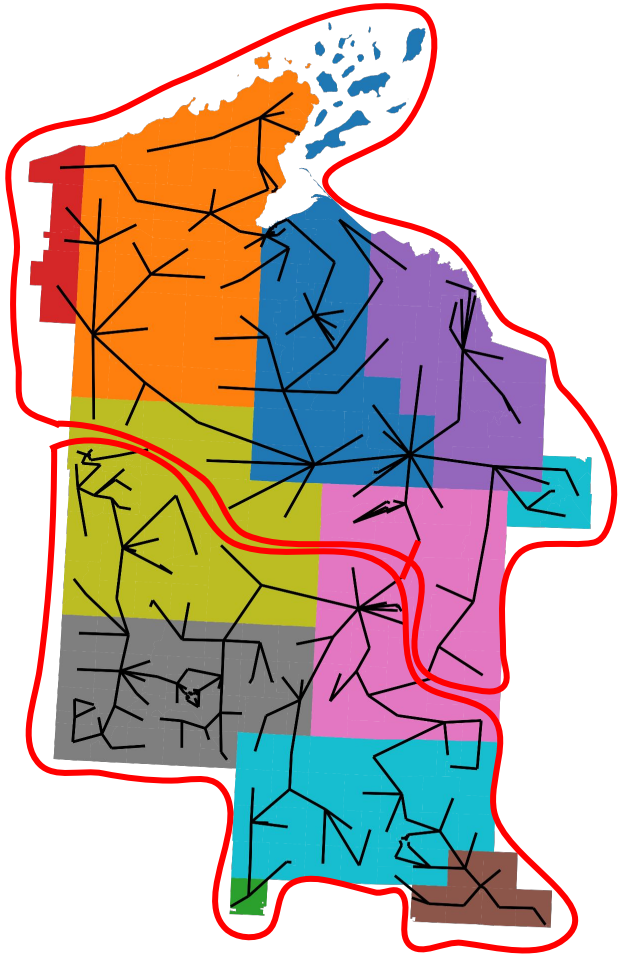

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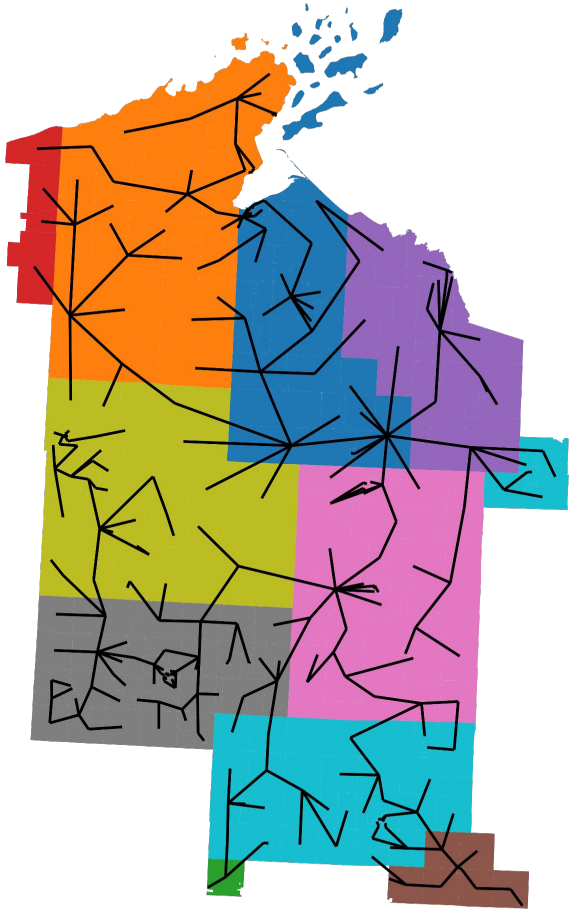
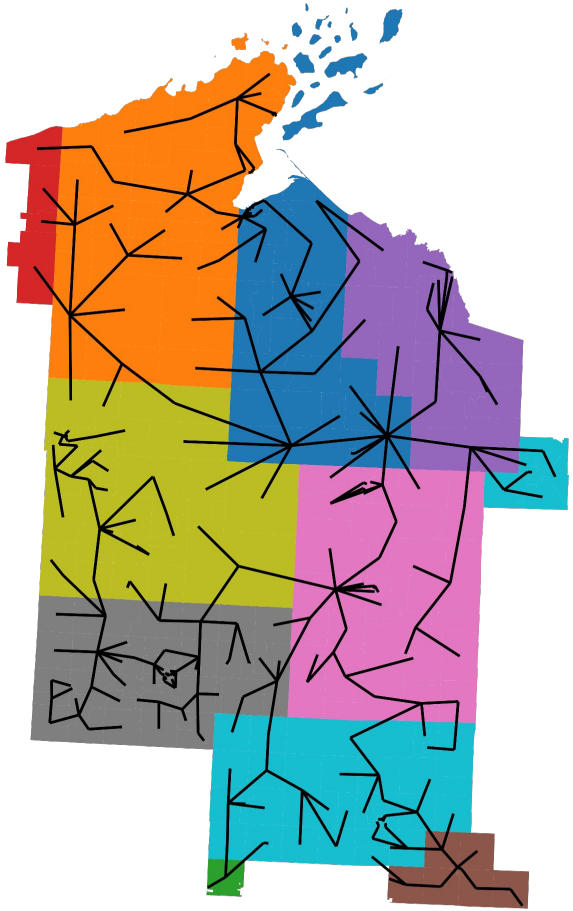


adding county awareness

instead…

- draw little trees in each county



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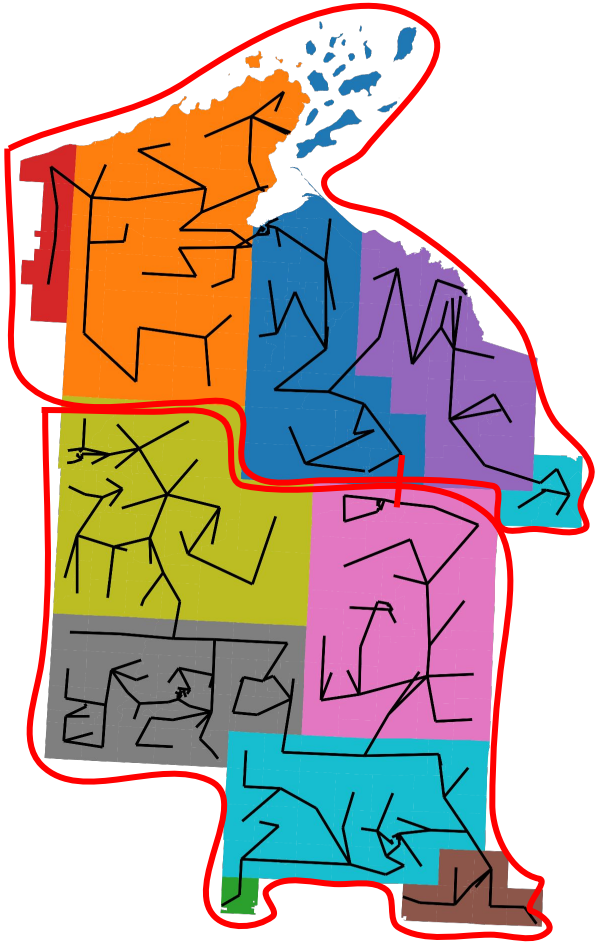

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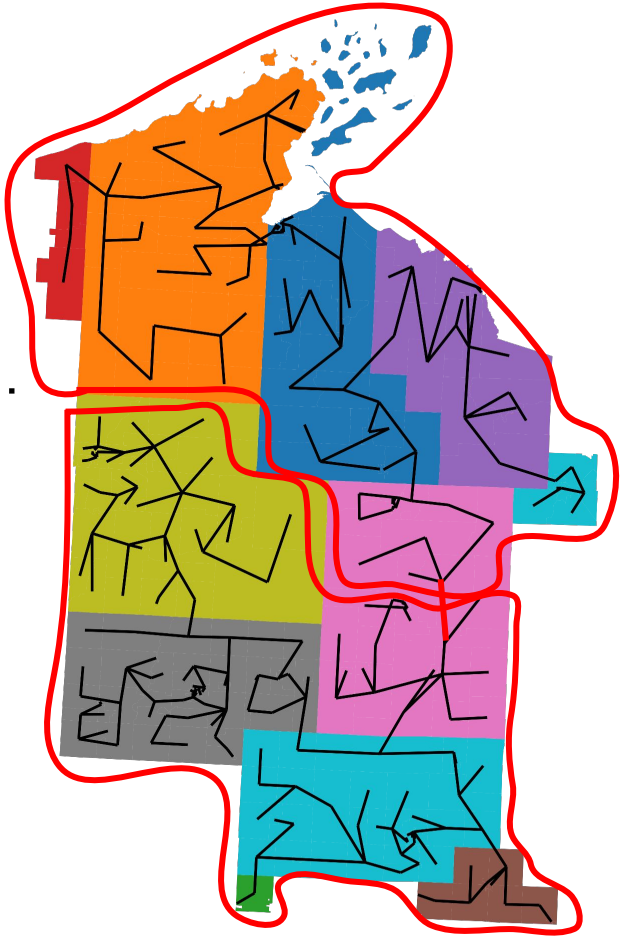
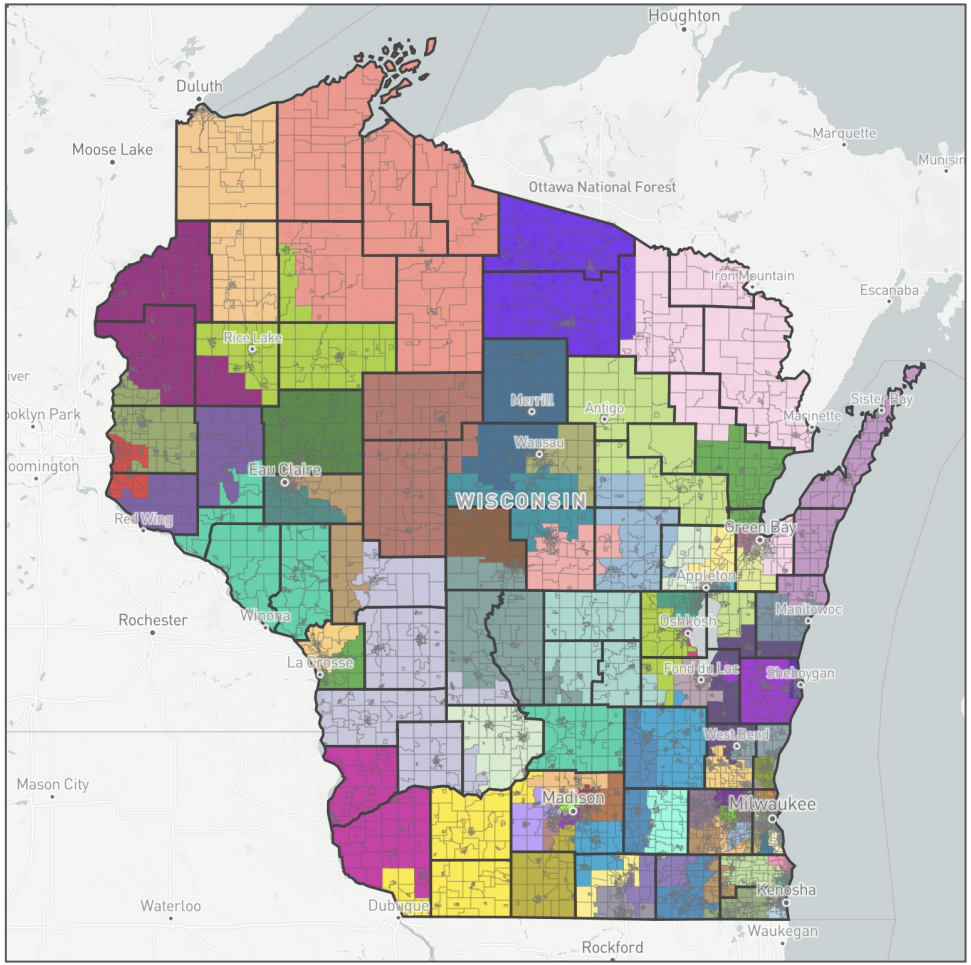


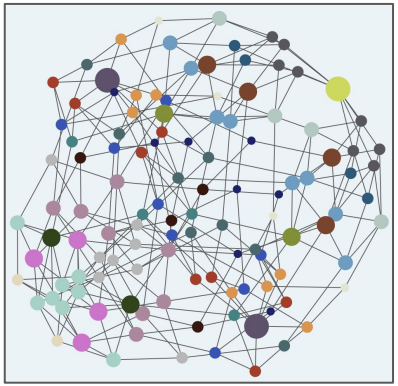
adding county awareness

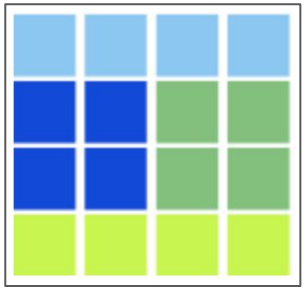
the result!

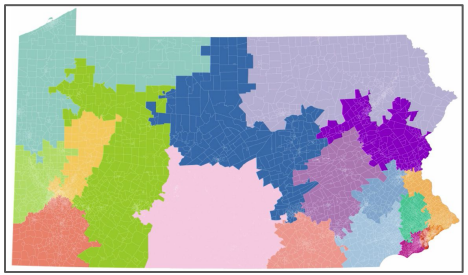


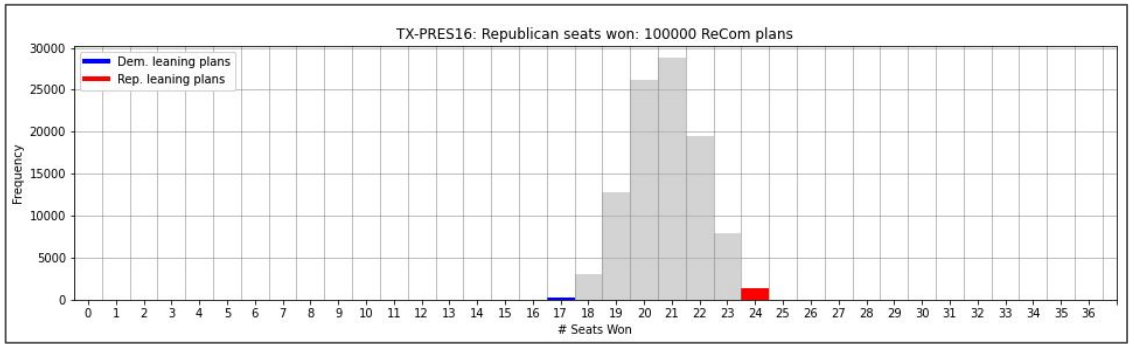
conclusion

- we use Markov chains to create ensembles of plans
- these ensembles should align with how legislators draw plans
- we can then put proposed plans in context, and spot gerrymandering

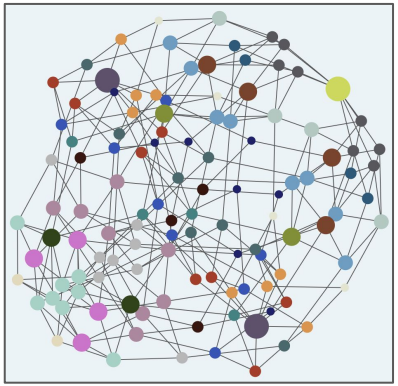


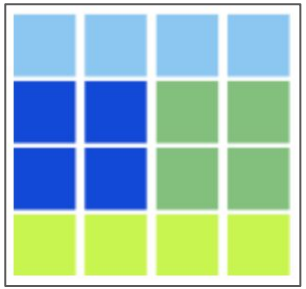


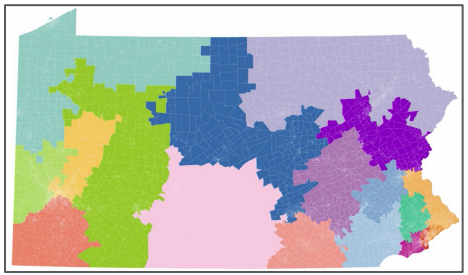


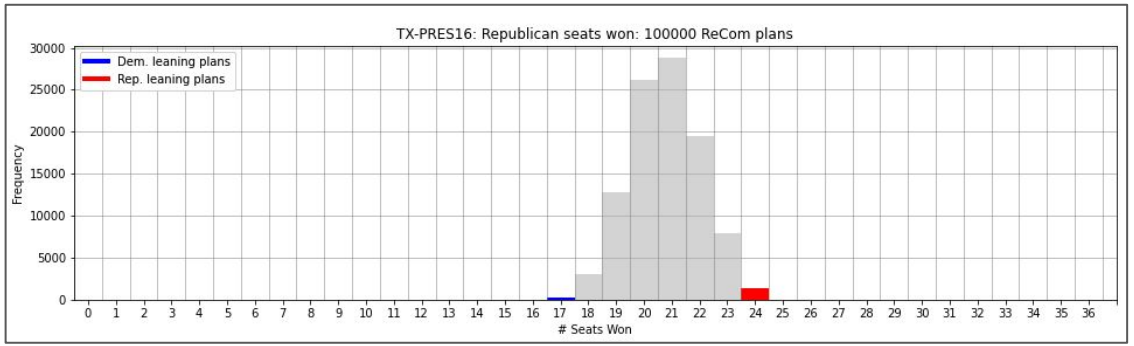


questions?








TX-PRES16: Republican seats won: 100000 ReCom plans
Dem. leaning plans
Rep. leaning plans
Frequency
30000
25000
20000
15000
10000
5000
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36
Seats Won