

# Please use our materials!

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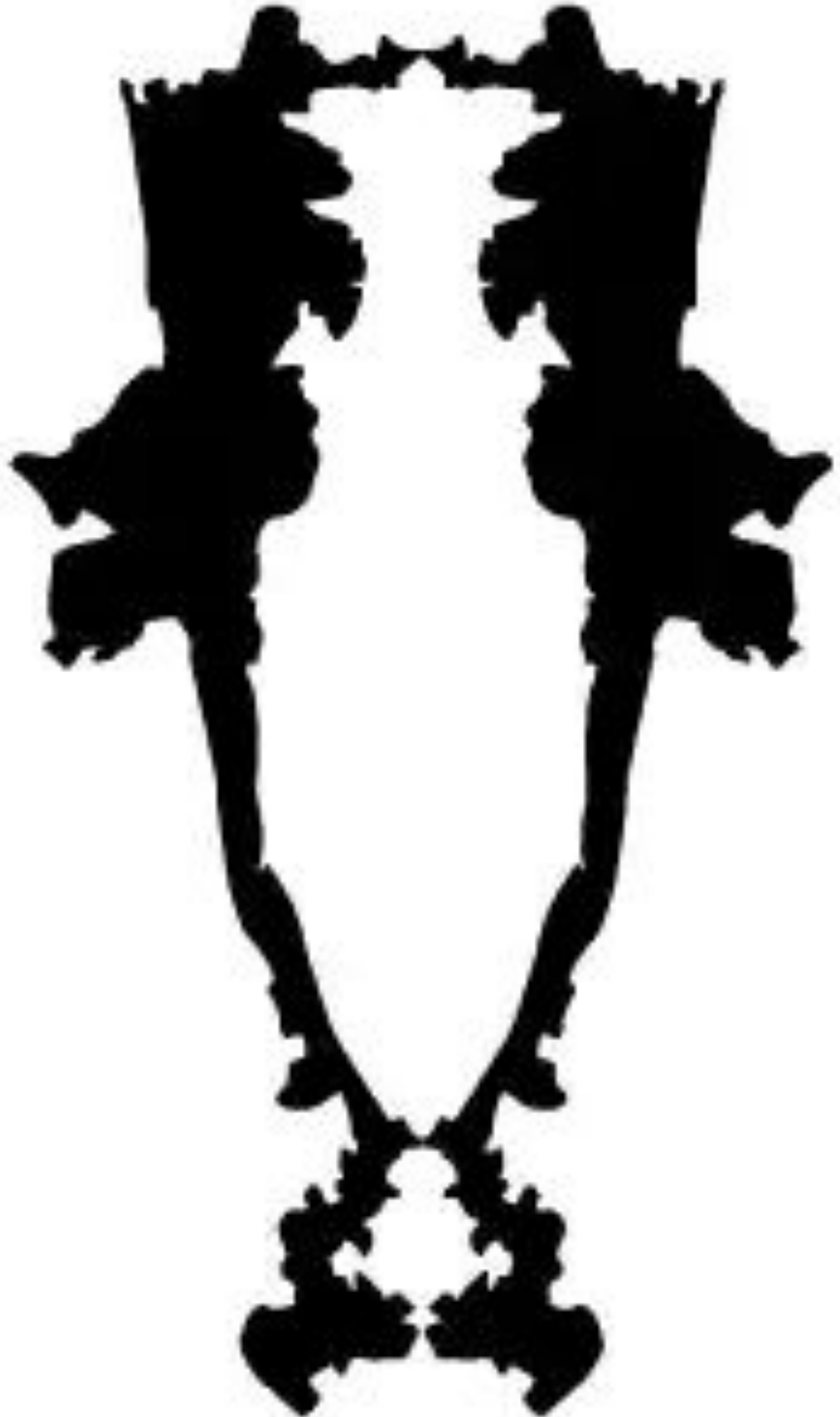
We also humbly request that you email [sarah.adams@olin.edu](mailto:sarah.adams@olin.edu) if you use these materials, as we are tracking their impact and how far they travel!



# Rapid Quiz

You get 15 seconds to write in the chat what each shape reminds you of.









# Gerrymandering

All of these are voting districts in the U.S. Why is that? How is it done? Why is it done.



# Gerrymandering

## What is it?

- When a political party draws the boundaries of legislative districts in a way that favors them.
- It's often said gerrymandering is a way for elected officials to pick their voters instead of voters getting to choose their elected officials.

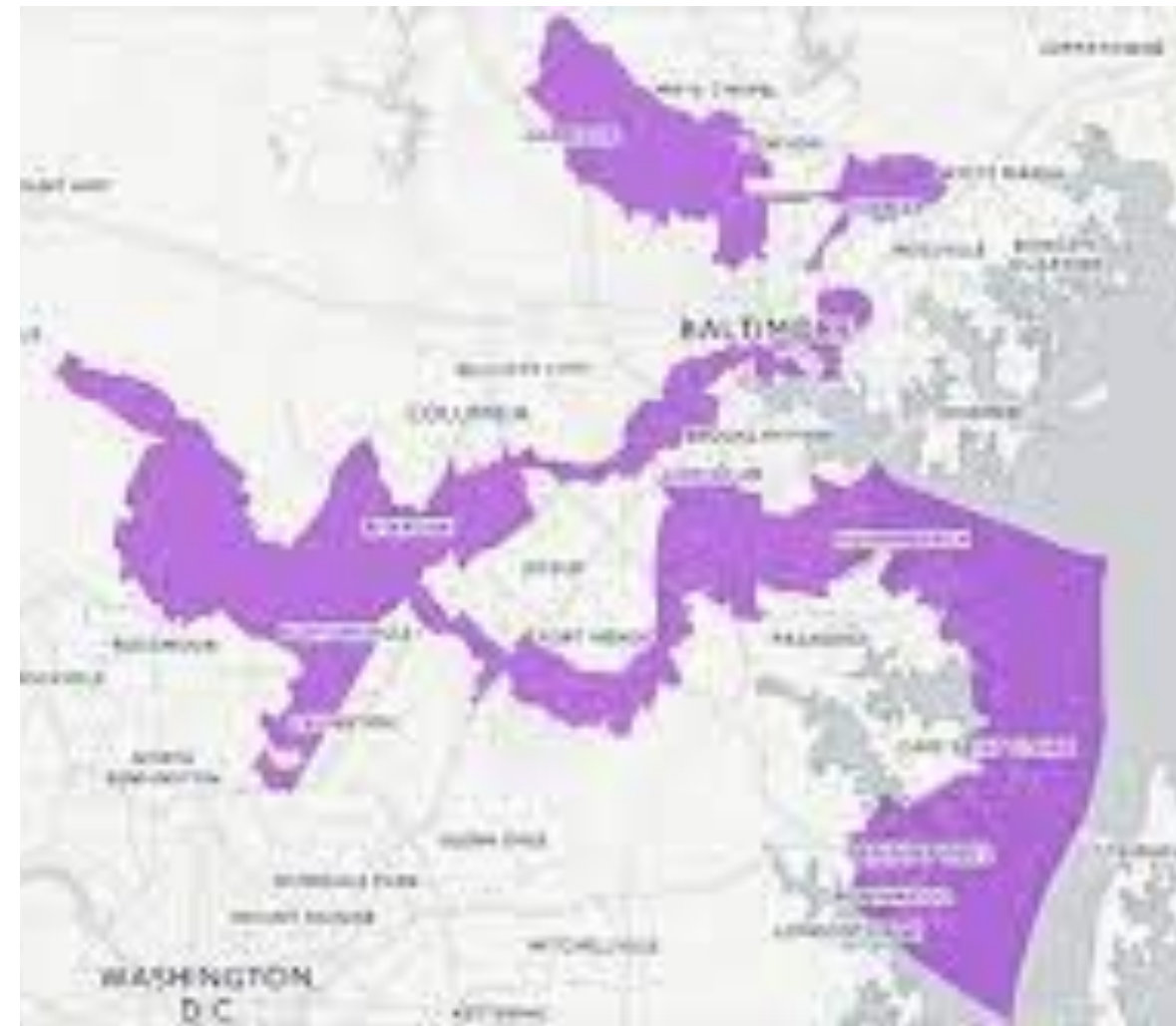


# Gerrymandering

## Some examples



Ohio's 9th Congressional District



Maryland's 3rd Congressional District



Texas' 35th Congressional District



Louisiana's 2nd Congressional District

What state do you think  
gerrymandering started in?

Why do you think it's called  
gerrymandering?



# Gerrymandering

## The origin story

- In 1812 the Governor of Massachusetts, Eldridge Gerry, signed a bill that allowed his party, the Democratic-Republicans, to redraw state Senate districts to its advantage.
- The Boston Gazette published a cartoon that compared the shape of a Senate district in Essex County to a salamander which led to the term Gerrymander.
- This attempt actually failed a year later with the Federalist gaining control of the state Senate and some thought the practice was dead.
- There is no clear evidence Gerry actually supported the map his party drew.





# How do we quantify how Gerrymandered a district is?

- This is actually still hotly debated.
  - The Supreme Court in 2019 said to evaluate partisan gerrymandering they needed a “limited and precise standard” that would be “clear, manageable, and politically neutral” but no one has proposed one.

# How do we quantify how Gerrymandered a district is?

## Method #1

- We can use geometry to determine "compactness"
  - Look at perimeter of the district vs. its surface area.
  - Draw a circle around the district & calculate its surface area then calculate the surface area of the district and compare.



# Activity

Let's quantify compactness



# Your Voting Districts

Enter your breakout room and we will come and tally your votes.

Breakout District 1: Name A, Name B, Name C...

Breakout District 2: Name A, Name B, Name C...

Breakout District 3: Name A, Name B, Name C...

# The Results...

Drum roll please.

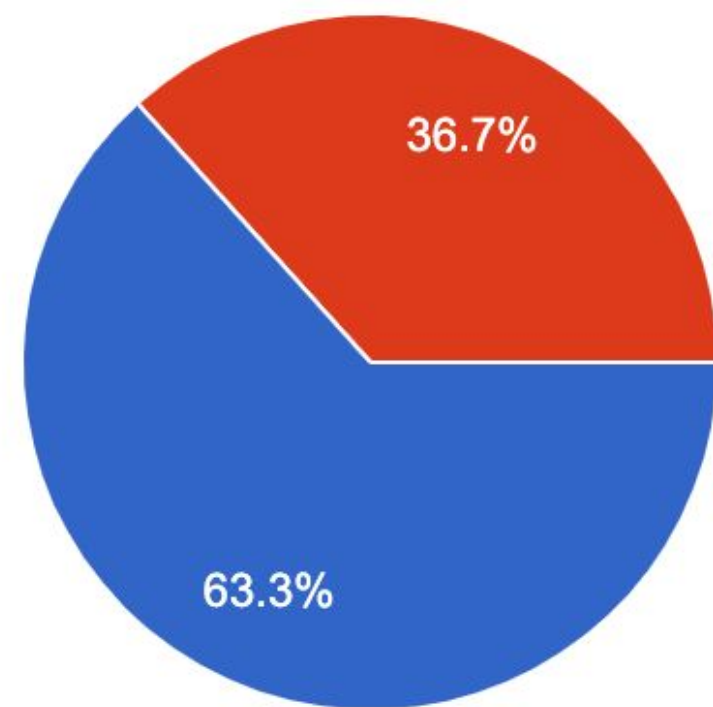


# The Breakdown

## How we manipulated the results

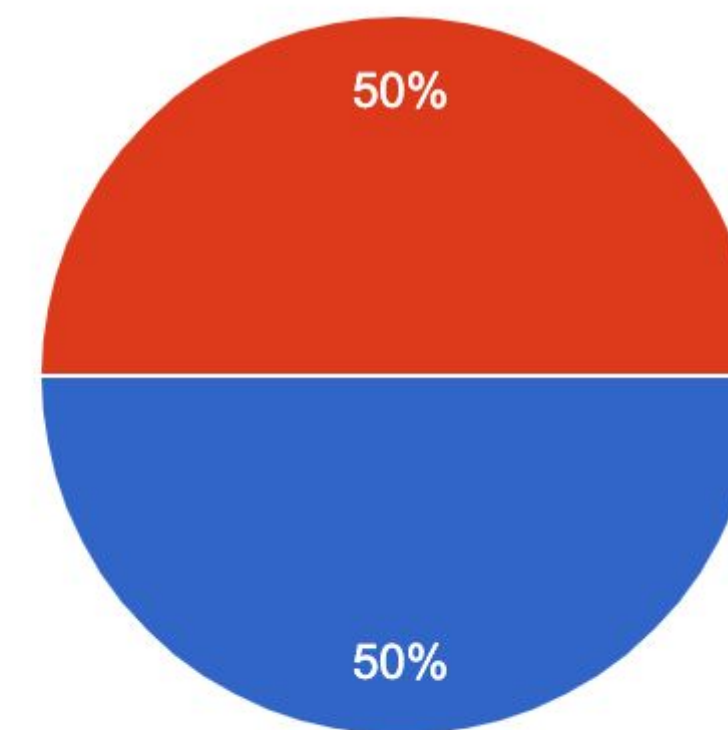
Ice Cream or Cake

30 responses



Ice Cream or Cake

6 responses



Edit this slide to show the “original” votes (using total number of votes) and the “after gerrymandering” votes (using gerrymandered districts).



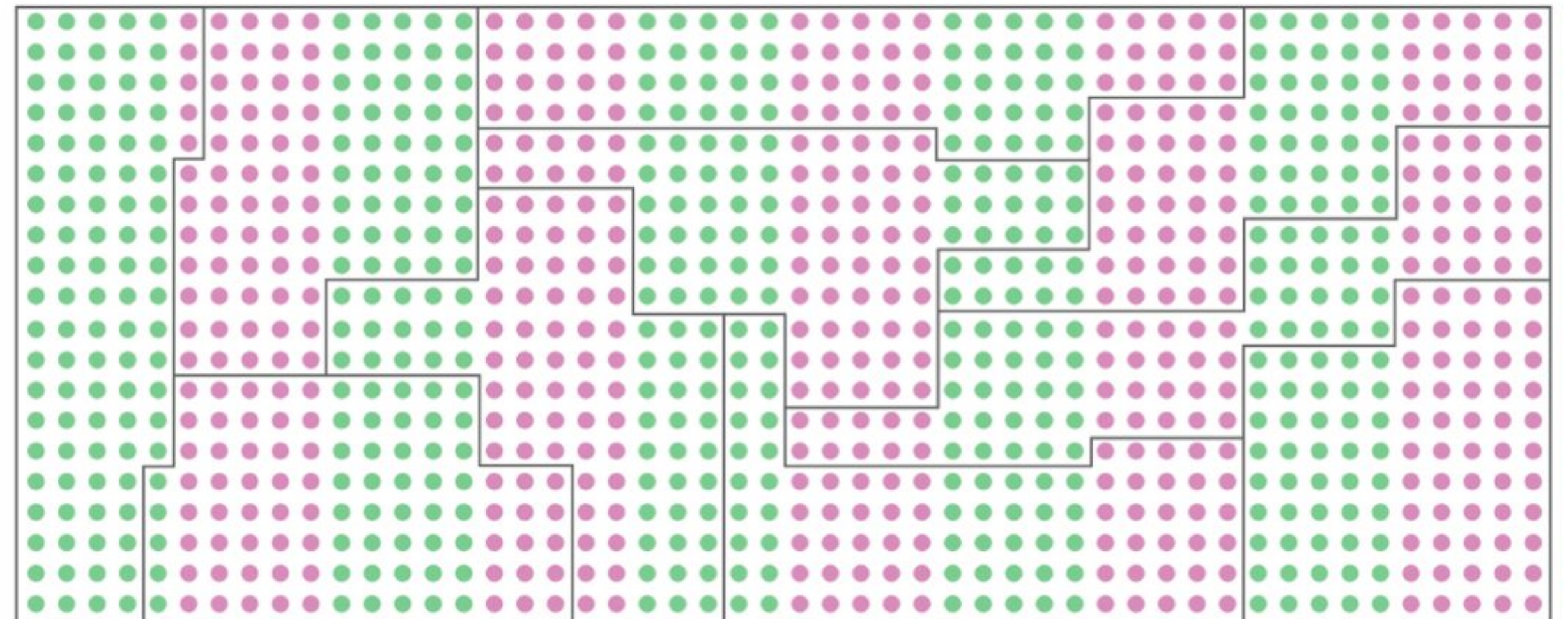
# How it's done

## Packing V Cracking

- **Packing:** the district is drawn to include as many voters from the opposing party as possible.
- **Cracking:** when you spilt up the opposing party's voters into many districts.
- Each is done to dilute the power of the opposing party.

## PACKING AND CRACKING

Say you want to gerrymander a 10-district state that has 500 pink voters and 500 green voters to maximize the number of districts won by the pink party. You could "pack" 95 green voters into one district, where green wins by a much larger margin than needed, and "crack" the remaining 405 green voters by spreading them across the other nine districts, where green loses.

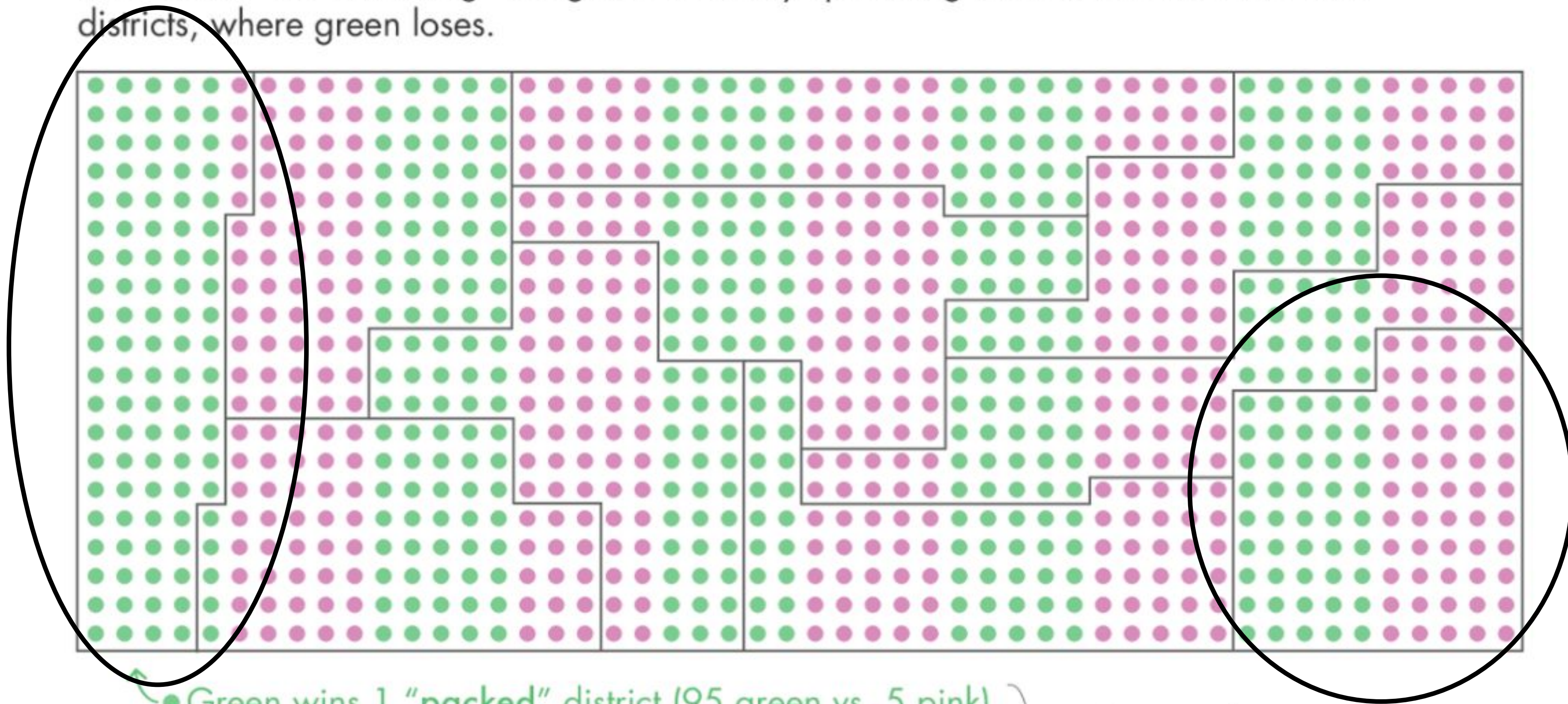


• Green wins 1 "packed" district (95 green vs. 5 pink)  
• Pink wins 9 "cracked" districts (45 green vs. 55 pink) } Pink wins election



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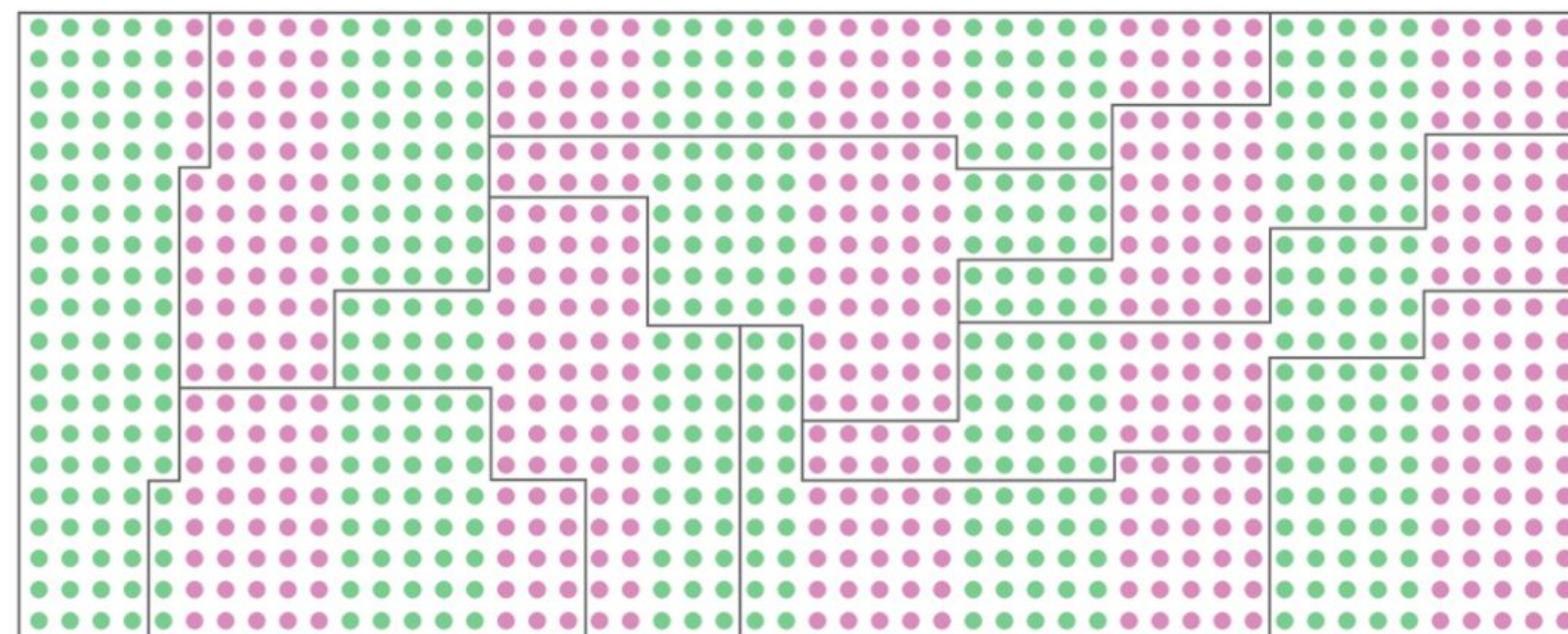


- Green wins 1 "packed" district (95 green vs. 5 pink)
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- } Pink wins election



# How do we quantify how Gerrymandered a district is?

- We can look at Partisan symmetry by calculating the efficiency gap
- Calculates the difference between the two party's "wasted votes"
- A wasted vote is when it's in a losing district or when it exceeds the 50 percent threshold.



● Green wins 1 "packed" district (95 green vs. 5 pink)  
● Pink wins 9 "cracked" districts (45 green vs. 55 pink) } Pink wins election

## Efficiency gap

A vote is considered wasted if it is in a losing district or if it exceeds the 50 percent threshold needed to win a district. In the gerrymandering example above:

|                    |   |                   |   |                    |  |
|--------------------|---|-------------------|---|--------------------|--|
| In losing district | + | Exceed threshold  | = | Total wasted votes | } Efficiency gap<br>of 400 residents<br>(or 40 percent of<br>the total population) |
| 5                  | + | 5 (x 9 districts) | = | 50                 |  |
| 45 (x 9 districts) | + | 45                | = | 450                |  |

# How do we quantify how Gerrymandered a district is?

- Simulation algorithms
  - We can create programs that produce MANY different maps and then run these other calculations on them and see how they compare to the original map.
  - One simulation looking at a map in Maryland found after drawing 250 million possible maps the proposed map favored Democrats more than 99.79% of the maps drawn by the algorithm.



# Gerrymander the Game

<http://gametheorytest.com/gerry/game/>



**LET'S MANDER**

# How it's done

## Who & When

- **Who:** State Legislatures
- **When:** after each census when new districts are drawn
- Redistricting taking place this year in 2021!