

# Partisan Gerrymandering

Gary King

Institute for Quantitative Social Science  
Harvard University

(talk at Brookline High School, 2/15/2011)

# The Most Predictably Conflictual Issue

# The Most Predictably Conflictual Issue

- Suppose you work hard,

# The Most Predictably Conflictual Issue

- Suppose you work hard, graduate from BHS,

# The Most Predictably Conflictual Issue

- Suppose you work hard, graduate from BHS, go to a great college,

# The Most Predictably Conflictual Issue

- Suppose you work hard, graduate from BHS, go to a great college, get a graduate degree,

# The Most Predictably Conflictual Issue

- Suppose you work hard, graduate from BHS, go to a great college, get a graduate degree, run for political office,

# The Most Predictably Conflictual Issue

- Suppose you work hard, graduate from BHS, go to a great college, get a graduate degree, run for political office, and get elected



# The Most Predictably Conflictual Issue

- Suppose you work hard, graduate from BHS, go to a great college, get a graduate degree, run for political office, and get elected
- You're a respected member of the Massachusetts legislature!

# The Most Predictably Conflictual Issue

- Suppose you work hard, graduate from BHS, go to a great college, get a graduate degree, run for political office, and get elected
- You're a respected member of the Massachusetts legislature!
- Can you think of *an issue* that would cause you to lose your temper, have a *fist fight* with other legislators, or act in *unethical* ways?

# The Most Predictably Conflictual Issue

- Suppose you work hard, graduate from BHS, go to a great college, get a graduate degree, run for political office, and get elected
- You're a respected member of the Massachusetts legislature!
- Can you think of *an issue* that would cause you to lose your temper, have a *fist fight* with other legislators, or act in *unethical* ways?
- Can you think of the most conflictual form of regular politics in the US over the last 200 years?

# The Most Predictably Conflictual Issue

- Suppose you work hard, graduate from BHS, go to a great college, get a graduate degree, run for political office, and get elected
- You're a respected member of the Massachusetts legislature!
- Can you think of *an issue* that would cause you to lose your temper, have a *fist fight* with other legislators, or act in *unethical* ways?
- Can you think of the most conflictual form of regular politics in the US over the last 200 years?
- Can you think of an issue about to cause a big ruckus?

# The Most Predictably Conflictual Issue

- Suppose you work hard, graduate from BHS, go to a great college, get a graduate degree, run for political office, and get elected
- You're a respected member of the Massachusetts legislature!
- Can you think of *an issue* that would cause you to lose your temper, have a *fist fight* with other legislators, or act in *unethical* ways?
- Can you think of the most conflictual form of regular politics in the US over the last 200 years?
- Can you think of an issue about to cause a big ruckus?

~> **Legislative Redistricting**

# The Most Predictably Conflictual Issue

- Suppose you work hard, graduate from BHS, go to a great college, get a graduate degree, run for political office, and get elected
- You're a respected member of the Massachusetts legislature!
- Can you think of *an issue* that would cause you to lose your temper, have a *fist fight* with other legislators, or act in *unethical* ways?
- Can you think of the most conflictual form of regular politics in the US over the last 200 years?
- Can you think of an issue about to cause a big ruckus?

~> **Legislative Redistricting**

(Watch Carefully; We'll have a contest to redistrict Brookline shortly!)

# U.S. House of Representatives

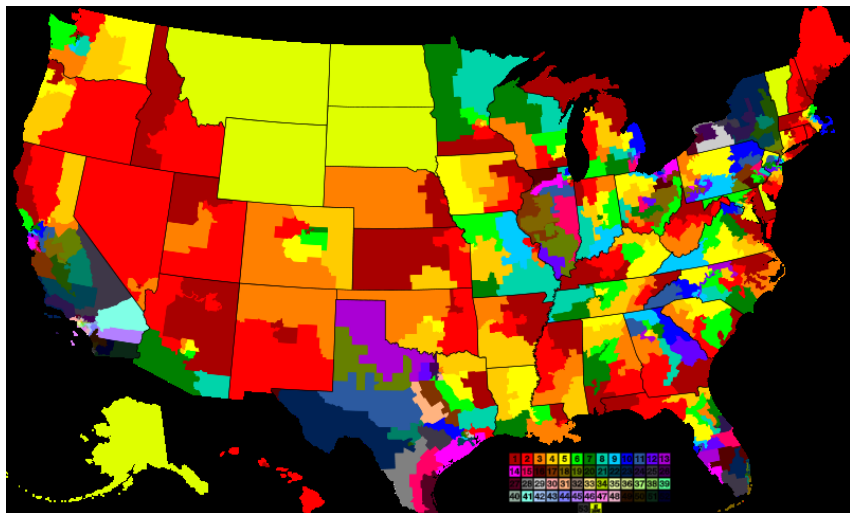


# Count Everyone $\rightsquigarrow$ Apportion Seats to States





# Redistrict Within States



# Fort Worth Star-Telegram

SEVENTEENTH CENTURY TELEGRAMS EDITION

## Texas Senators Head For New Mexico To Block Redistricting

### The Senators

Senators from Texas are expected to arrive in New Mexico today to block the state's new redistricting plan.

### Senators

Senators from Texas are expected to arrive in New Mexico today to block the state's new redistricting plan.

### Senators

Senators from Texas are expected to arrive in New Mexico today to block the state's new redistricting plan.

### National Center for Policy Analysis

The National Center for Policy Analysis is a non-partisan, non-profit research organization that provides objective analysis and commentary on public policy issues.

### Senators

Senators from Texas are expected to arrive in New Mexico today to block the state's new redistricting plan.

### Senators

Senators from Texas are expected to arrive in New Mexico today to block the state's new redistricting plan.

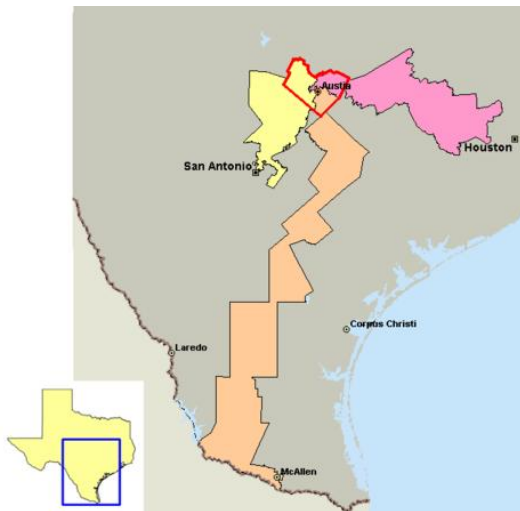
# Is this fair?

Texas, *before* redistricting



# Or is *this* fair?

Texas, *after* redistricting



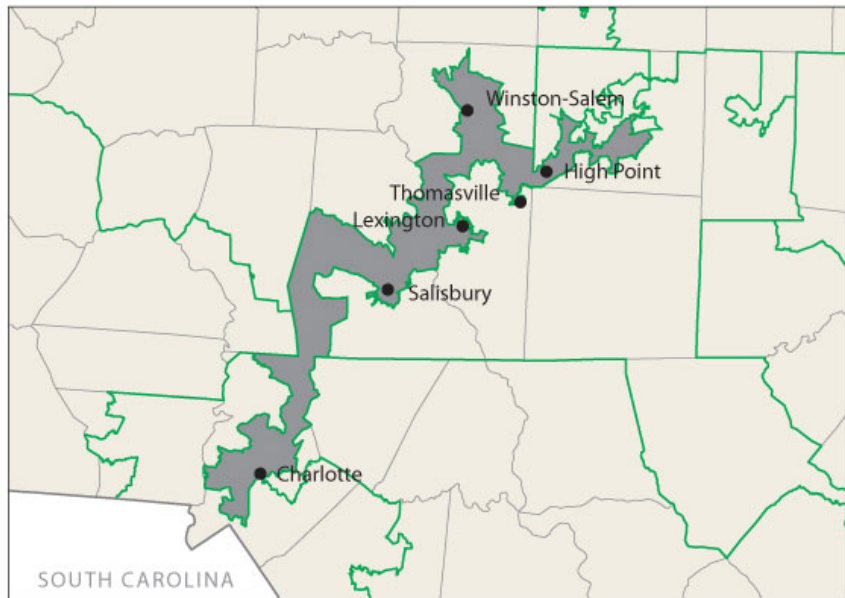
# (Important but Inadequate!) Standards for Fairness

- 1 Equal population
- 2 Preserving “Communities of Interest”
- 3 Compactness (and contiguity)

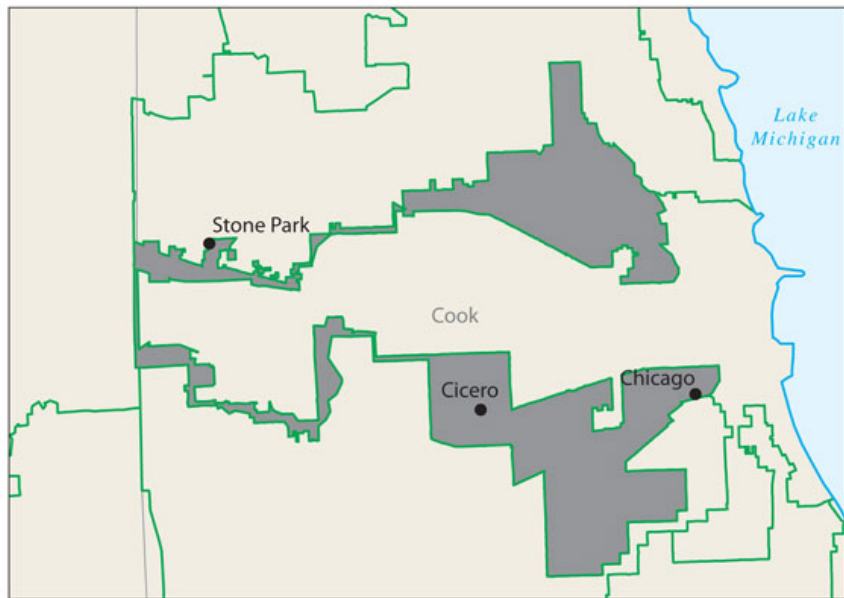
# Arizona's 2nd Congressional District



# North Carolina's 12th Congressional District



# Illinois' 4th Congressional District





# Governor Gerry's 1812 "Gerrymander" in Massachusetts



# How many (of 4) legislative seats should each party get?

Democratic vote % in each precinct

90	40	40	40
90	40	40	40
90	40	40	40
90	40	40	40

(Average = 52.5%)

# A Republican Redistricting Plan

90	40	40	40
90	40	40	40
90	40	40	40
90	40	40	40

Average    90    40    40    40

↪ Democrats win 1 of 4 seats

# A Democratic Redistricting Plan

Average

90	40	40	40	52.5
90	40	40	40	52.5
90	40	40	40	52.5
90	40	40	40	52.5

↪ Democrats win all 4 seats

# New Standards for Fair Redistricting

- 1 Equal population
- 2 Preserving “Communities of Interest”
- 3 Compactness (and contiguity)
- 4 Partisan symmetry (no bias)
- 5 Electoral responsiveness

# The Supreme Court on Partisan Symmetry

Cite as: 548 U. S. \_\_\_\_ (2006)

1

Opinion of KENNEDY, J.

NOTICE: This opinion is subject to formal revision before publication in the preliminary print of the United States Reports. Readers are requested to notify the Reporter of Decisions, Supreme Court of the United States, Washington, D. C. 20543, of any typographical or other formal errors, in order that corrections may be made before the preliminary print goes to press.

## SUPREME COURT OF THE UNITED STATES

Nos. 05–204, 05–254, 05–276 and 05–439

LEAGUE OF UNITED LATIN AMERICAN CITIZENS,  
ET AL., APPELLANTS

05–204

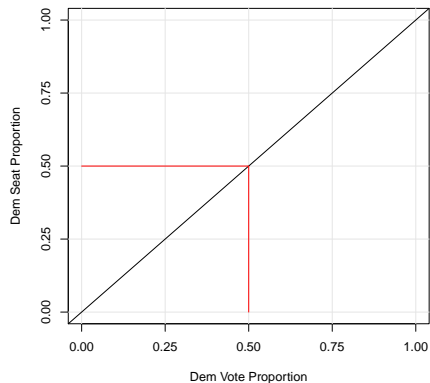
*v.*

RICK PERRY, GOVERNOR OF TEXAS, ET AL.

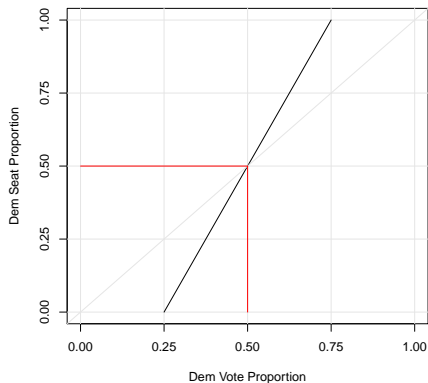
# Fair Seats-Votes Curves

Partisan symmetry: When votes are split equally, seats are split equally

Fair, Proportional



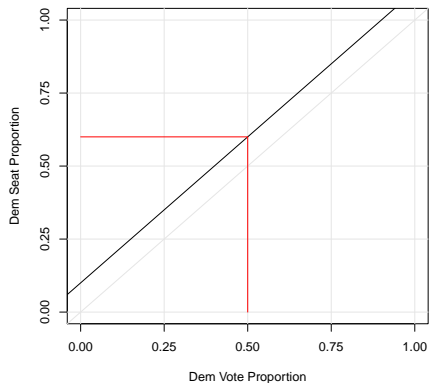
Fair, Responsive



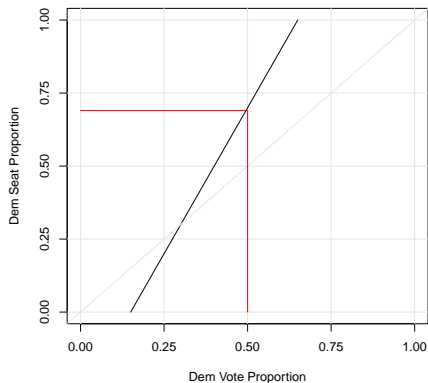
# Biased Seats-Votes Curves

Partisan Bias: When votes are split equally, seats are split **unequally**

**Biased, Proportional**

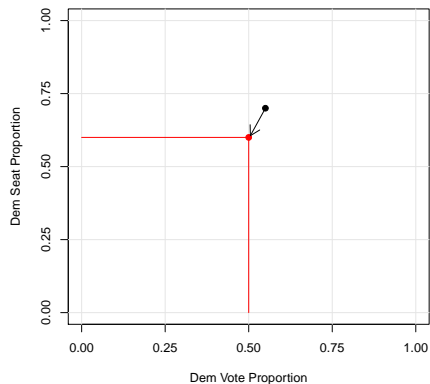


**Biased, Responsive**



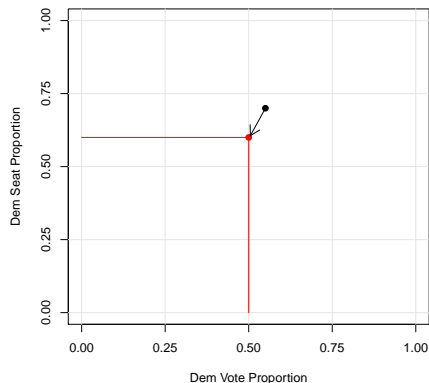


# Calculating a Seats-Votes Curve

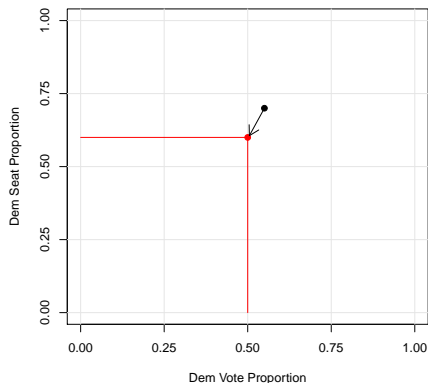


# Calculating a Seats-Votes Curve

- Compute average vote and seat proportions; plot black dot

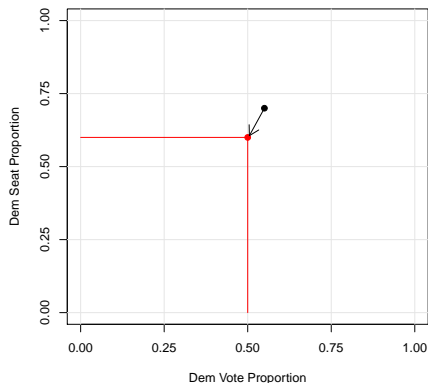


# Calculating a Seats-Votes Curve



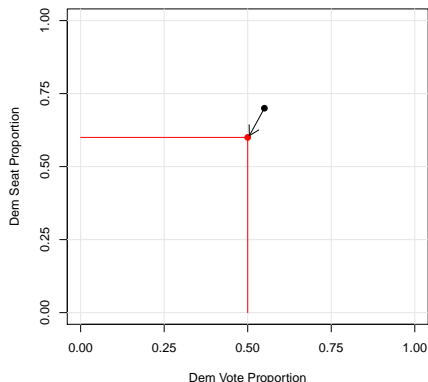
- Compute average vote and seat proportions; plot black dot
- Find difference of vote average from 0.5

# Calculating a Seats-Votes Curve



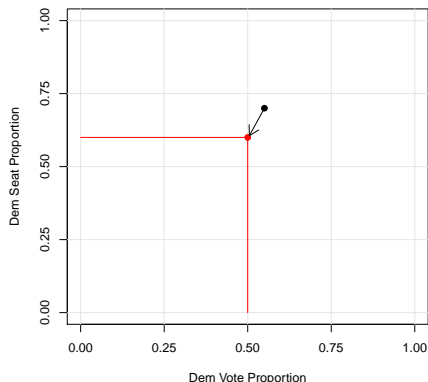
- Compute average vote and seat proportions; plot black dot
- Find difference of vote average from 0.5
- Add difference from every district's vote (new vote average = 0.5)

# Calculating a Seats-Votes Curve



- Compute average vote and seat proportions; plot black dot
- Find difference of vote average from 0.5
- Add difference from every district's vote (new vote average = 0.5)
- See who "wins" new districts with the adjusted votes; calculate seat proportion; plot red dot

# Calculating a Seats-Votes Curve

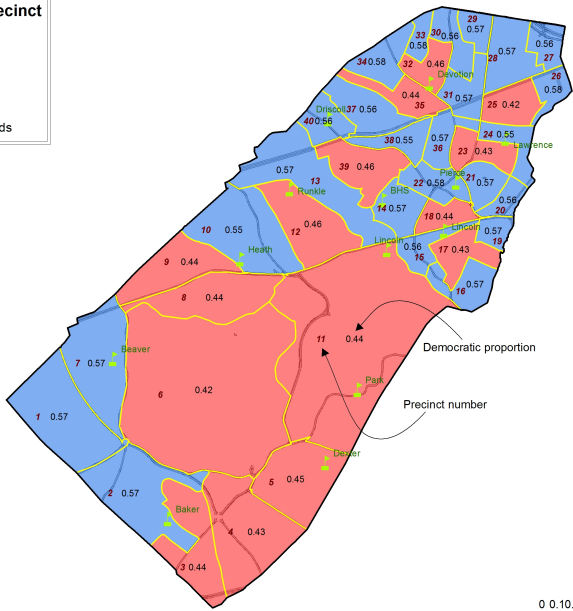


- Compute average vote and seat proportions; plot black dot
- Find difference of vote average from 0.5
- Add difference from every district's vote (new vote average = 0.5)
- See who "wins" new districts with the adjusted votes; calculate seat proportion; plot red dot
- Calculate bias (difference in seat proportion from 0.5)

# Brookline Precinct

## Winner

- D
- R
- Schools
- Major Roads



Democratic proportion  
Precinct number



# What did we learn?



# What did we learn?

- In redistricting, the rules of the game are part of the game

# What did we learn?

- In redistricting, the rules of the game are part of the game
- With partisan symmetry, math can make redistricting fair

# What did we learn?

- In redistricting, the rules of the game are part of the game
- With partisan symmetry, math can make redistricting fair
- In practice, redistricting is a mess; law suits will be filed everywhere; rules will be broken; hundreds of millions of dollars will be spent

# What did we learn?

- In redistricting, the rules of the game are part of the game
- With partisan symmetry, math can make redistricting fair
- In practice, redistricting is a mess; law suits will be filed everywhere; rules will be broken; hundreds of millions of dollars will be spent
- To legislators, this is *the* most visible issue

# What did we learn?

- In redistricting, the rules of the game are part of the game
- With partisan symmetry, math can make redistricting fair
- In practice, redistricting is a mess; law suits will be filed everywhere; rules will be broken; hundreds of millions of dollars will be spent
- To legislators, this is *the* most visible issue
- Redistricting is often invisible to the public. . . but not to you!