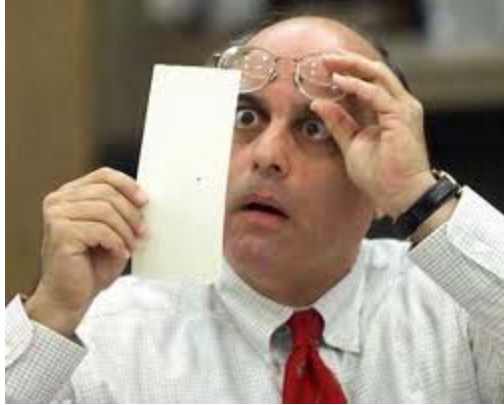


# Do Voting Machine Cause Lost Votes?

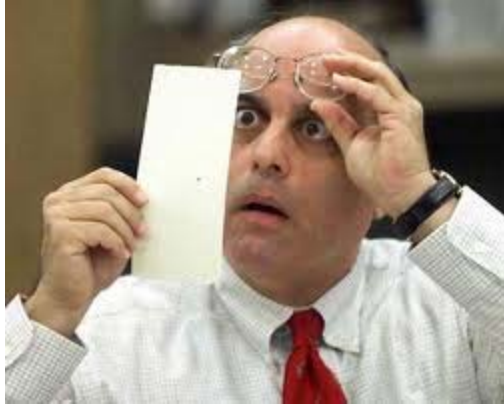
17.871

Spring 2013

# 2000 Presidential Election



# 2000 Presidential Election



# 2000 Presidential Election



How do we know if some voting machines are more prone to “lost votes” than others?

If some are prone to more lost votes than others, how big of a problem is it?

How do we know if some voting machines are more prone to losing votes than others?

How do we know if some voting machines are more prone to losing votes than others?



Law

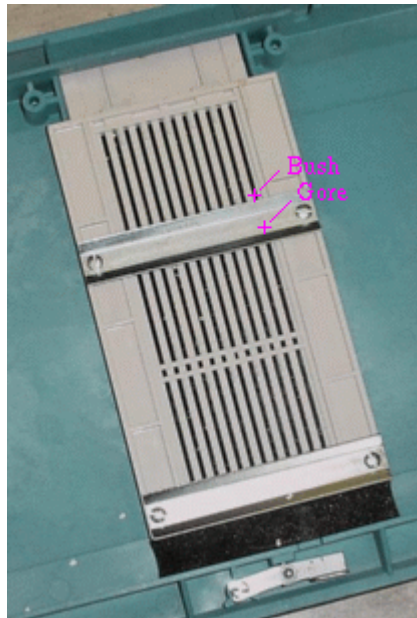
How do we know if some voting machines are more prone to losing votes than others?



Engineering

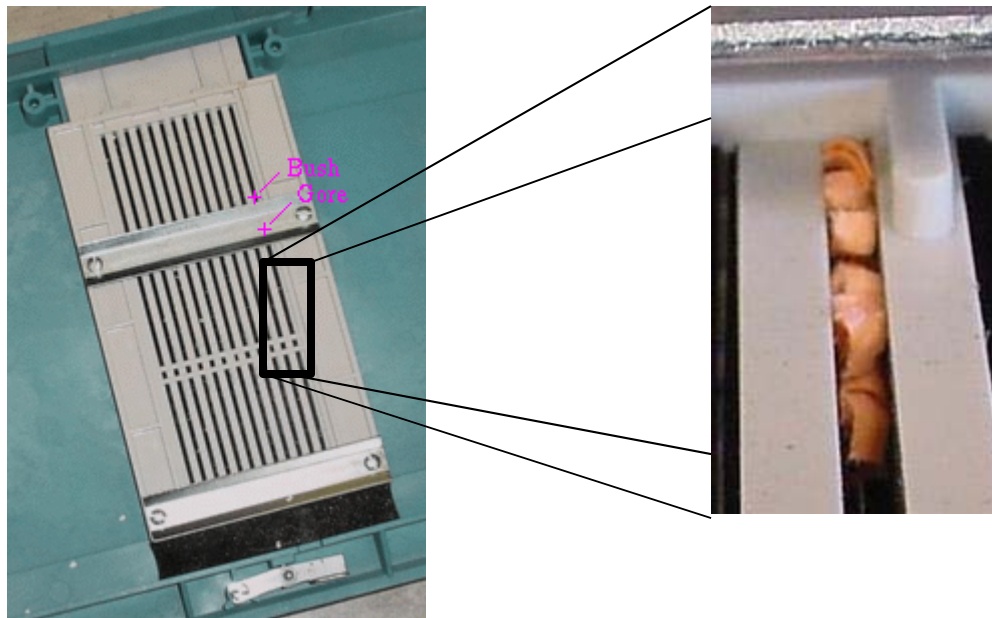


How do we know if some voting machines are more prone to losing votes than others?



Engineering

# How do we know if some voting machines are more prone to losing votes than others?



Engineering

# How do we know if some voting machines are more prone to losing votes than others?

Tech.	Under-vote pct.	Over-vote pct.	Lost vote pct.	Number of counties
Datavote (punch)	0.83%	6.10%	6.93%	9
Hand-count	0.65%	6.09%	6.74%	1
Lever	0.29%	0.09%	0.38%	1
Optical scan	0.31%	1.05%	1.36%	41
Votomatic (punch)	1.52%	2.42%	3.94%	15
Statewide	1.03%	1.91%	2.94%	67

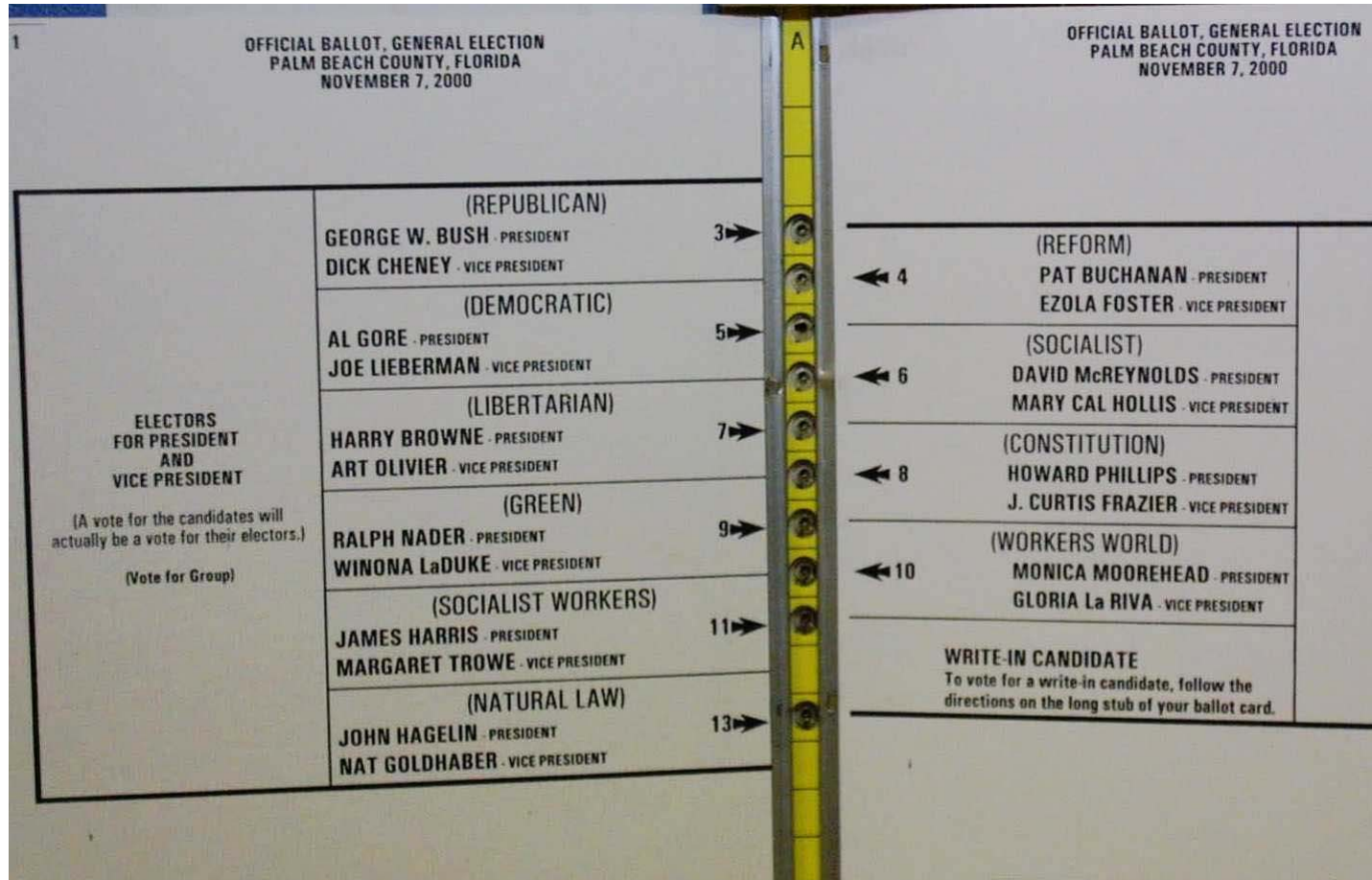
Data sources:

Election returns: Florida Division of Elections

Over- under-vote counts: NORC recount project

Statistics, correlational

# An Aside: The Butterfly Ballot Mattered



# Many Columns Are Bad

	Number of ballot columns		
Technology	1	2	Total
Datavote (punch)	7.09% (7)	6.73% (2)	6.93% (9)
Hand-count		6.74% (1)	6.74% (1)
Lever	0.38% (1)		0.38% (1)
Optical scan	0.89% (27)	7.03% (14)	1.36% (41)
Votomatic (punch)	2.91% (13)	8.07% (2)	3.94% (15)
Total	2.06% (48)	7.81% (19)	2.94% (67)

# How do we know if some voting machines are more prone to losing votes than others?

	Machine in 2000				
Machine in 1996:	Votomatic	Lever	Opscan	DRE	Total
Votomatic	-0.52% (171)		-1.96% (179)	-0.40% (8)	-0.98% (365)
Lever	-0.69% (2)	-0.08% (114)	-0.24% (65)	0.66% (111)	0.03% (294)
Opscan			-1.42% (74)	-0.84% (1)	-1.33% (75)
DRE				-1.92% (35)	
Total	-0.92% (215)	-0.08% (119)	-1.29% (616)	-0.94% (65)	-0.81% (1,402)

(Quasi-) Experimental

Note: the table isn't complete, although the totals in the columns and rows reflect the entire table

# Some points relevant to 17.871

- Political science can provide a service to society by framing questions causally, and reducing complicated matters to clear observables.
- Addressing important questions of public policy requires creative combinations of insight, data, and method.

# Relevant to the Syllabus (to come)

- Statistics

TABLE 3  
Residual Vote Multivariate Analysis, Presidential, Gubernatorial, and  
Senatorial Elections, 1988–2000

	Fixed-effects estimates		No fixed effects, explicit controls	
	President	Gov. & senator	President	Gov. & senator
Equipment effects:				
Punch card	.0082 (.0015)	-.0030 (.0018)	.0077 (.0005)	-.021 (.001)
Lever machine	Excluded equip. category	Excluded equip. category	Excluded equip. category	Excluded equip. category
Paper	-.014 (.002)	-.014 (.003)	-.0012 (.0014)	-.022 (.002)
Optical scan	-.0045 (.0014)	-.014 (.002)	.00071 (.00070)	-.032 (.001)
Electronic (DRE)	.0022 (.0015)	-.012 (.002)	.0080 (.0010)	-.0097 (.0013)
Shift in tech.	.0010 (.0007)	-.0004 (.0010)	.00005 (.00067)	-.0021 (.0013)
Log (turnout)	.0095 (.0026)	.031 (.003)	-.0004 (.0001)	.0005 (.0002)
Gov. or Sen. on ballot	-.0011 (.0007)	-.004 (.001)	-.003 (.001)	.005 (.001)
Senator	—	.008 (.001)	—	.009 (.001)
Percent Over 65	—	—	.047 (.008)	.104 (.009)
Percent 18–24	—	—	-.012 (.009)	.027 (.010)
Percent White	—	—	-.030 (.002)	-.045 (.003)
Percent Hispanic	—	—	.011 (.004)	.005 (.005)
Median Income (10,000s)	—	—	-.002 (.001)	-.001 (.001)
Constant	-.11 (.03)	-.29 (.03)	.025 (.002)	.027 (.016)
N	8,982	11,625	8,982	11,625
R <sup>2</sup>	.79	.74	.14	.43
Fixed effect: (not shown)	Year × State County	Year × State County	Year × State	Year × State
Number of categories	3,346	2,245	—	—
F test	F(3345,5572) = 2.971 (p < .0001)	F(2244,9318) = 3.705 (p < .0001)	—	—



# Relevant to the Syllabus (to come)

- Statistics
- Mechanics

Firefox | ... | Christopher ... | Psychological... | MIT Politica... | 2000 Electio... | Internal Vali... | stata\_infile ... | Google Des... | Florida Dep... | Florida D... x

state.fl.us | https://doe.dos.state.fl.us/elections/resultsarchive/Index.asp?ElectionDates=11/7/2000&DATAMODE=

LibX MIT | Keyword | scho | Search MIT's WorldCat | Clear | Scholar

**Election Results**

Select Election:  
2000 General

**November 7, 2000 General Election**

Select Office:  
U.S. President

Select County:  
Select

[Voter Turnout](#)  
[Download Results](#)  
[Special Election Results](#)  
[Supervisors of Elections](#)  
[Elections Information](#)  
[Division of Elections](#)

**Florida Department of State  
Division of Elections  
November 7, 2000 General Election**

Official Results

County	President of the United States											
	Bush / Cheney (REP)	Gore / Lieberman (DEM)	Browne / Olivier (LIB)	Nader / LaDuke (GRE)	Harris / Trowe (SWP)	Hagelin / Goldhaber (LAW)	Buchanan / Foster (REF)	McReynolds / Hollis (SPF)	Phillips / Frazier (CPF)	Moorehead / La Riva (WWP)	Chote / Lancaster (WRI)	McCarthy / Beifus (WRI)
Alachua	34,124	47,365	658	3,226	6	42	263	4	20	21	0	0
Baker	5,610	2,392	17	53	0	3	73	0	3	3	0	0
Bay	38,637	18,850	171	828	5	18	248	3	18	27	0	0
Bradford	5,414	3,075	28	84	0	2	65	0	2	3	0	0
Brevard	115,185	97,318	643	4,470	11	39	570	11	72	76	0	0
Broward	177,902	387,703	1,217	7,104	54	135	795	37	74	122	0	0
Calhoun	2,873	2,155	10	39	0	1	90	1	2	3	0	0
Charlotte	35,426	29,645	127	1,462	6	15	182	3	18	12	0	0
Citrus	29,767	25,525	194	1,379	5	16	270	0	18	28	2	0
Clay	41,736	14,632	204	562	1	14	186	3	6	9	0	0
Collier	60,450	29,921	185	1,400	7	34	122	4	10	29	0	0
Columbia	10,964	7,047	127	258	1	7	89	2	8	5	0	0
Desoto	4,256	3,320	23	157	0	0	36	3	8	2	3	3
Dixie	2,697	1,826	32	75	0	2	29	0	3	2	0	0
Duval	152,098	107,864	952	2,757	37	162	652	15	58	41	0	0
Escambia	73,017	40,943	296	1,727	6	24	502	3	110	20	0	0
Flagler	12,613	13,897	60	435	1	4	83	3	3	12	0	0
Franklin	2,454	2,046	17	85	1	3	33	0	3	2	0	0
Gadsden	4,767	9,735	24	139	3	4	38	4	7	6	0	0
Gilchrist	3,300	1,910	52	97	0	1	29	0	2	4	0	0
Glades	1,841	1,442	12	56	0	3	9	1	0	1	0	0
Gulf	3,550	2,397	21	86	2	4	71	2	2	9	0	0
Hamilton	2,146	1,722	12	37	4	1	23	8	7	4	0	0
Hardee	3,765	2,339	17	75	0	2	30	0	2	3	0	0
Hendry	4,747	3,240	11	104	3	1	22	2	7	2	0	0
Hernando	30,646	32,644	116	1,501	8	26	242	4	10	22	0	0
Highlands	20,206	14,167	64	545	6	16	127	3	7	8	0	0
Hillsborough	180,760	169,557	1,138	7,490	35	217	847	29	68	154	0	0
Holmes	5,011	2,177	18	94	1	7	76	3	6	2	0	0
Indian River	28,635	19,768	122	950	4	13	105	2	13	10	0	0
Jackson	9,138	6,868	40	138	0	2	102	1	4	7	0	0
Jefferson	2,478	3,041	14	76	2	1	29	1	0	0	0	1
Lafayette	1,670	789	6	26	2	0	10	1	1	0	0	0
Lake	50,010	36,571	204	1,460	4	36	289	1	21	15	0	0
Lee	106,141	73,560	538	3,587	30	81	305	5	34	96	0	0
Leon	39,062	61,427	330	1,932	9	28	282	7	16	31	0	0
Levy	6,858	5,398	92	284	1	1	67	1	10	12	0	0

Find: r | Next | Previous | Highlight all | Match case | Reached end of page, continued from top

# Relevant to the Syllabus (to come)

- Statistics
- Mechanics
- Project



Caltech/MIT  
Voting Technology Project

# Postlude



**A Farewell to Koch, Who Led Before Them**  
 Mayor Michael R. Bloomberg, Borough W. Giuliani and David N. Dinkins at Mayor Edward I. Koch's funeral Monday. Page A15.

## Hand of U.S. Is Seen in Halting a General's Rise

This article by Greg Phillips, Ronald C. Amundson and the Pentagon's analysis that he had received military support and logistical help from multilateralist defense circles. It was one of the factors keeping General Petraeus from receiving the promotion to four-star general that he had earned. The article also discusses the role of the Obama administration in the decision.

## In 2 Trailers, The Neighbors Nobody Wants

This article by Michael M. Grynbaum, N.Y. — The trailer in this month's North Carolina election is not for a candidate but for a trailer. It is a trailer for a trailer, a trailer for a trailer, a trailer for a trailer. The article discusses the political implications of the trailer industry.

## For Raven, a Glorious Return (To Hometown and End Zone)

This article by Peter Lipton, N.Y. — Just as the Ravens' season began, the team's star player, Ray Lewis, returned to his hometown. The article discusses his career and his impact on the team.

## Bookcase of a King

This article by Richard D. Page, N.Y. — The article discusses the bookcase of a king, likely referring to a historical figure or a specific collection of books.

## Waiting Times At Ballot Boxes Draw Scrutiny

Democrats Seeking to Make Voting Easier

This article by Steven W. Patten, WASHINGTON — Long lines at the polls are drawing attention to the need for election reform. Democrats are pushing for changes to make voting easier and more secure.

## U.S. ACCUSES S.P. OF FRAUD IN SUIT ON LOAN BUNDLES

HIGH RATINGS FAULTED

This article by Michael M. Grynbaum, N.Y. — The Justice Department has filed a lawsuit against Standard & Poor's, accusing it of fraud in its ratings of mortgage-backed securities. The suit alleges that S.P. inflated ratings to help sell more bonds.

## Alghosa Find a Refuge Hard and Cold

An Afghan refugee, center, in a Pakistan tent. Many refugees lack wintering supplies and shelter.



An Afghan refugee, center, in a Pakistan tent. Many refugees lack wintering supplies and shelter.

<b>INTERNATIONAL</b>	<b>NATIONAL</b>	<b>SPORTS</b>	<b>SCIENCE</b>	<b>OPINION</b>
<b>Brief on Targets of Killings</b> A Justice Department report shows the... PAGE A1	<b>Child Freed as His Captor Dies</b> A 10-year-old child was freed as his captor... PAGE A1	<b>Fading Is Found in Soccer</b> A former soccer player's memoirs... PAGE B1	<b>Signs to Dissolve Even Darwin</b> Evolutionary biologist's theory... PAGE B1	<b>David Brooks</b> PAGE A1

Follow your dream. Watch your back.

**SMASH**

2 HOUR REUNION PREVIEW TONIGHT 9/8c

# Postlude



**A Farewell to Koch, Who Led Before Them**  
 Mayor Michael R. Bloomberg, Borough W. Giuliani and David N. Dinkins at Mayor Edward I. Koch's funeral Monday, Page A15.

## Hand of U.S. Is Seen in Halting a General's Rise

**This article by Greg Phillips, Ronald C. Amundson and Eric Lipton**

An American military official says that the United States has been instrumental in halting the rise of a general in the Mexican military who is seen as a potential threat to the United States.

The article discusses the role of the United States in the Mexican military and the potential threat posed by a general who is seen as a potential threat to the United States.

## In 2 Trailers, The Neighbors Nobody Wants

**By MICHAEL KRAMER**

IN WASHINGTON, D.C. — The trailer in this month's North Carolina election is not for a candidate but for a policy that would allow the state to build a new trailer park for the homeless.

The article discusses the challenges of building a new trailer park for the homeless and the potential benefits of such a program.

## For Raven, a Glorious Return (To Hometown and End Zone)

**By JEFF LEONARD**

NEW ORLEANS — Just as the city's football fans were celebrating the return of the Saints to the field, they were also celebrating the return of a former player to his hometown.

The article discusses the return of a former player to his hometown and the impact of his return on the community.

## Bookcase of a King

**Richard D. Page A4**

A bookcase of a king is a collection of books that are owned by a king. The article discusses the bookcase of a king and the significance of the books.

## Alghero Find a Refuge Hard and Cold



**Alghero Find a Refuge Hard and Cold**  
 An Alghero shelter, center, in a Palermo town. Many refugees lack winter coats and blankets.

**By JEFF LEONARD**

ALGERIA — In a town in Sicily, a group of refugees are struggling to survive the winter. The article discusses the challenges of being a refugee and the impact of the winter weather.

<b>INTERNATIONAL</b>	<b>NATIONAL</b>	<b>SPORTS</b>	<b>SCIENCE</b>	<b>EDITORIAL</b>
<b>Brief on Targets of Killings</b>	<b>Child Freed as His Captor Dies</b>	<b>Fading Is Found in Soccer</b>	<b>Signs to Dissolve Even Darwin</b>	<b>David Brooks</b>
Page A1	Page A1	Page A1	Page A1	Page A1

Follow your dream. Watch your back.

**SMASH**

2 HOUR REUNION PREVIEW TONIGHT 9/8c

## Waiting Times At Ballot Boxes Draw Scrutiny

**Democrats Seeking to Make Voting Easier**

Democrats are seeking to make voting easier by reducing waiting times at ballot boxes. The article discusses the challenges of long waiting times and the potential solutions.

## ACCUSES S.B.P. FRAUD IN SUIT

**LOAN BUNDLES**

**RATINGS FAULTED**

The article discusses a lawsuit filed by a group of investors against the Securities and Exchange Commission, alleging fraud in the sale of loan bundles.

## Big Federal Action

**Against Industry on**

**Star Mortgages**

The article discusses a major federal action against the mortgage industry, focusing on the issue of star mortgages.

## By NATHAN WILSON

**AND CONGRESS**

The article discusses the role of Congress in the mortgage industry and the impact of the federal action.

## By NATHAN WILSON

**AND CONGRESS**

The article discusses the role of Congress in the mortgage industry and the impact of the federal action.

## By NATHAN WILSON

**AND CONGRESS**

The article discusses the role of Congress in the mortgage industry and the impact of the federal action.

## By NATHAN WILSON

**AND CONGRESS**

The article discusses the role of Congress in the mortgage industry and the impact of the federal action.

## By NATHAN WILSON

**AND CONGRESS**

The article discusses the role of Congress in the mortgage industry and the impact of the federal action.

## By NATHAN WILSON

**AND CONGRESS**

The article discusses the role of Congress in the mortgage industry and the impact of the federal action.

## By NATHAN WILSON

**AND CONGRESS**

The article discusses the role of Congress in the mortgage industry and the impact of the federal action.

## By NATHAN WILSON

**AND CONGRESS**

The article discusses the role of Congress in the mortgage industry and the impact of the federal action.

# Postlude



A Massachusetts Institute of Technology analysis determined that blacks and Hispanics waited nearly twice as long in line to vote on average than whites. Florida had the nation's longest lines, at 45 minutes, followed by the District of Columbia, Maryland, South Carolina and Virginia, according to Charles Stewart III, the political science professor who conducted the analysis.

# Postlude II

HOME PAGE | TODAY'S PAPER | VIDEO | MOST POPULAR | U.S. Edition ▾ | Subscribe to Home Delivery | cstewartii ▾ | Help

**The New York Times** **Politics** Search All NYTimes.com

WORLD | U.S. | N.Y. / REGION | BUSINESS | TECHNOLOGY | SCIENCE | HEALTH | SPORTS | OPINION | ARTS | STYLE | TRAVEL | **JOBS** | REAL ESTATE

**AUTOS**

POLITICS HOME | THE CAUCUS | FIFTYTHIRTY EIGHT | ELECTION 2012 | G.O.P. PRIMARY | INSIDE CONGRESS | POLL WATCH | VIDEO

Advertise on NYTimes.com

## Lost Votes, Problem Ballots, Long Waits? Flaws Are Widespread, Study Finds

By ADAM LIPTAK  
Published: February 5, 2013

WASHINGTON — The flaws in the American election system are deep and widespread, extending beyond isolated voting issues in a few locations and flaring up in states rich and poor, according to a [major new study](#) from the Pew Charitable Trusts.

The group ranked all 50 states based on more than 15 criteria, including wait times, lost votes and problems with absentee and provisional ballots, and the order often confounds the conventional wisdom.

In 2010, for instance, Mississippi ranked last over all. But it was preceded by two surprises: New York and California.

“Poor Southern states perform well, and they perform badly,” said Heather K. Gerken, a law professor at Yale and a Pew adviser. “Rich New England states perform well and badly — mostly badly.”

A main goal of the exercise, which grew out of Professor’s Gerken’s 2009 book, “The Democracy Index,” was to shame poor performers into doing better, she said.

**Multimedia**

or n.

lil Graphic

Problems at the Polls in 2008

**Related**

[Waiting Times at Ballot Boxes Draw Scrutiny \(February 5, 2013\)](#)

**What's Popular Now**

Scholars Say Bones Belonged to Richard III

Friends of Fraud

Log in to see what your friends are sharing on nytimes.com.  [Privacy Policy](#) | [What's This?](#)

FACEBOOK | TWITTER | GOOGLE+ | SAVE | E-MAIL | SHARE | PRINT | SINGLE PAGE | REPRINTS

Advertise on NYTimes.com

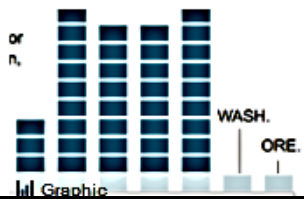
**TicketWatch: Theater Offers by E-Mail**

Sign up for ticket offers from Broadway shows and other advertisers.

# Postlude II

Charles Stewart III, a political scientist at the Massachusetts Institute of Technology and a Pew adviser, said that high provisional ballot rates were an important signal of potential trouble.

## Multimedia



“Nationwide, a bit over 1 percent of voters are given a provisional ballot,” he said. “In Arizona in 2008, the rate was 6.5 percent. In the battleground state of Ohio, it was 3.6 percent. While these numbers may seem small, in a recount or election dispute, they would be huge.”

