

Who Won?: Statistical Election Fraud Detection and its Limits

EVT '06

Walter R. Mebane, Jr.

Cornell University

- **accuracy, errors, fraud, transparency, legitimacy**
- **usability**
 - **ballots (FL butterfly, CA recall, Ohio ballot crawl)**
- **technologies**
 - **paper (Mexico 2006)**
 - **punchcards, optical DRE (OH 2004)**
 - **electronic (FL 2004)**
- **policy and practice**
 - **auditability (transaction logs, FL 2004)**
 - **allocation (Franklin County, OH, 2004)**
 - **provisionals (OH 2004)**

- **usability**

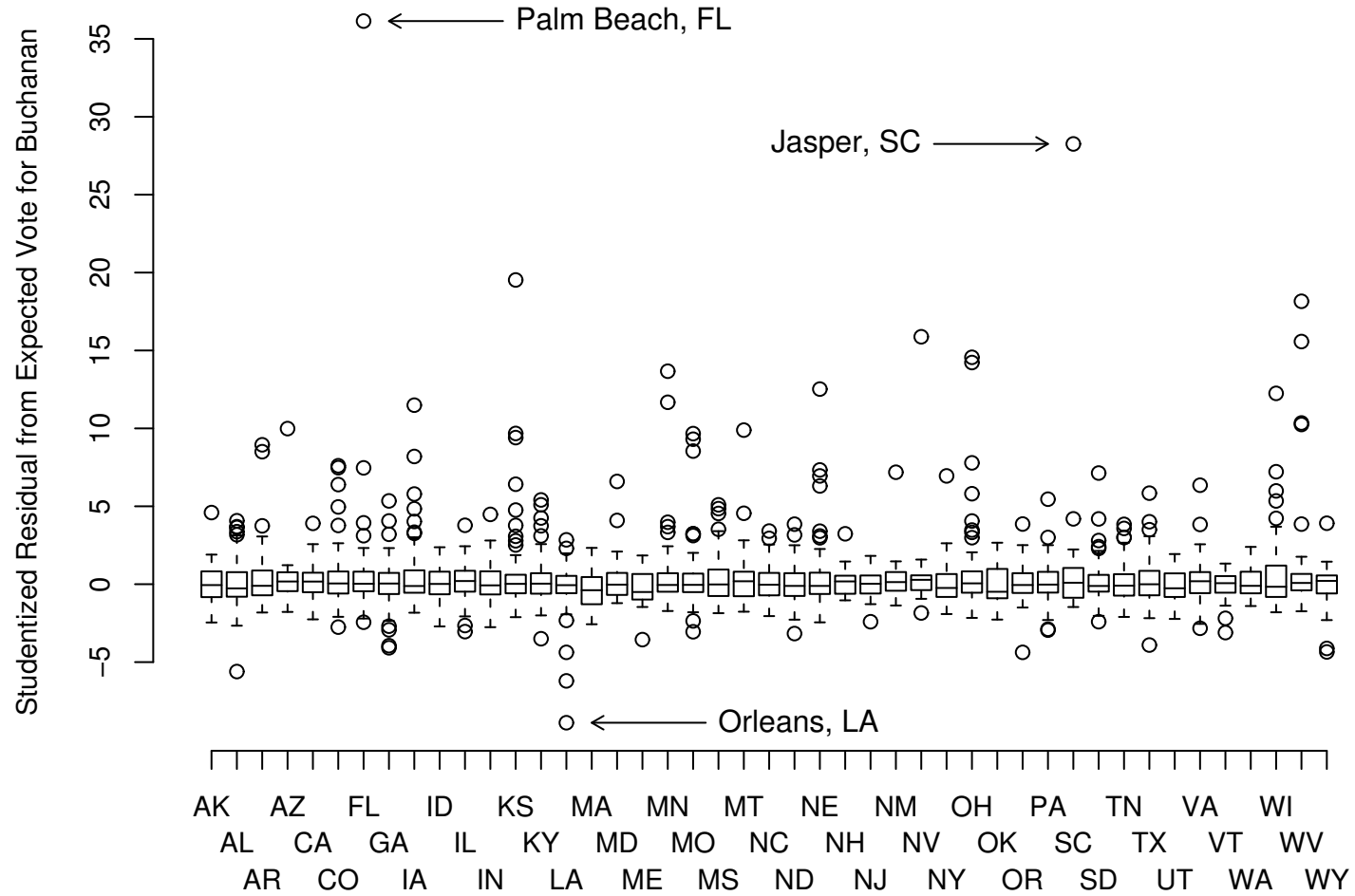
- **ballots in the 2000 presidential election in Florida**

The Palm Beach County Butterfly Ballot

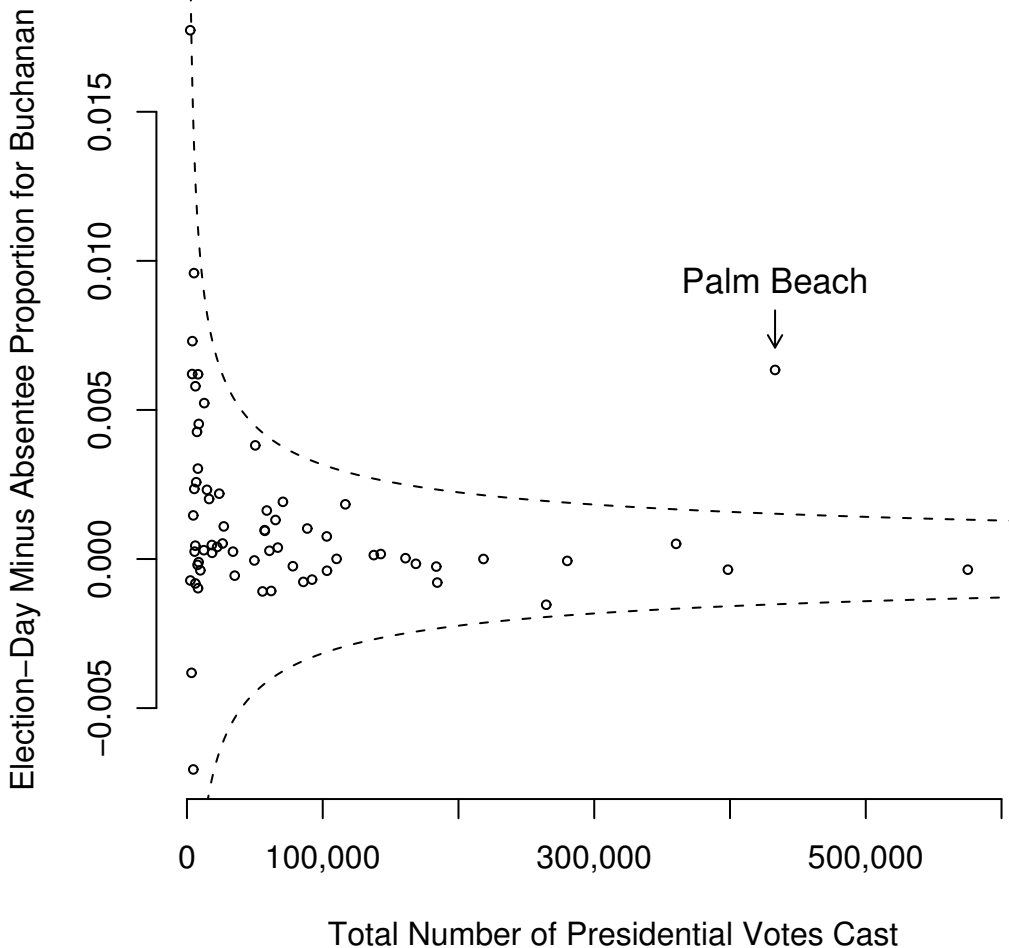
1 OFFICIAL BALLOT, GENERAL ELECTION PALM BEACH COUNTY, FLORIDA NOVEMBER 7, 2000		A		1 OFFICIAL BALLOT, GENERAL ELECTION PALM BEACH COUNTY, FLORIDA NOVEMBER 7, 2000	
<p>ELECTORS FOR PRESIDENT AND VICE PRESIDENT</p> <p>(A vote for the candidates will actually be a vote for their electors.)</p> <p>(Vote for Group)</p>	(REPUBLICAN)	3 →			
	GEORGE W. BUSH, PRESIDENT DICK CHENEY, VICE PRESIDENT			← 4	(REFORM) PAT BUCHANAN, PRESIDENT EZOLA FOSTER, VICE PRESIDENT
	(DEMOCRATIC)	5 →		← 6	(SOCIALIST) DAVID McREYNOLDS, PRESIDENT MARY CAL HOLLIS, VICE PRESIDENT
	AL GORE, PRESIDENT JOE LIEBERMAN, VICE PRESIDENT			← 8	(CONSTITUTION) HOWARD PHILLIPS, PRESIDENT J. CURTIS FRAZIER, VICE PRESIDENT
	(LIBERTARIAN)	7 →		← 10	(WORKERS WORLD) MONICA MOOREHEAD, PRESIDENT GLORIA LA RIVA, VICE PRESIDENT
	HARRY BROWNE, PRESIDENT ART OLIVIER, VICE PRESIDENT				WRITE-IN CANDIDATE To vote for a write-in candidate, follow the directions on the long stub of your ballot card.
	(GREEN)	9 →			
RALPH NADER, PRESIDENT WINONA LaDUKE, VICE PRESIDENT					
(SOCIALIST WORKERS)	11 →				
JAMES HARRIS, PRESIDENT MARGARET TROWE, VICE PRESIDENT					
(NATURAL LAW)	13 →				
JOHN HAGELIN, PRESIDENT NAT GOLDHABER, VICE PRESIDENT					

TURN PAGE TO CONTINUE VOTING →

Boxplots of Studentized Residuals in U.S. Counties, by State



2000 Election-Day Minus Absentee Ballot Support for Buchanan in Florida Counties



Votes and Allocated Overvotes in Florida, 2000 Presidential
Election

	Vote Counts	
	Bush	Gore
Certified Results:		
Certified Total	2,912,790	2,912,253
Uncounted Election-day Ballots:		
Unambiguous Write-ins	477	732
Ambiguous Write-ins	220	812
Two-mark Overvotes	15,236	39,148
Multiple-mark Overvotes	8,355	29,328
All Allocated Overvotes	24,288	70,020

Number of Allocated Ballots, 2000 Presidential Election, NORC Data

	Two Marks		Multiple	
	Bush	Gore	Bush	Gore
Tabulation				
Votomatic—Duval	4,868	8,480	1,512	5,617
Votomatic—Miami-Dade	1,932	5,103	1,235	5,731
Votomatic—Palm Beach	2,258	10,687	811	3,882
Votomatic—Other	2,419	8,472	1,456	5,603
Datavote—One Page	248	407	377	1,053
Datavote—Two Pages	385	390	317	533
Optical Central—One Column	262	557	441	908
Optical Central—Two Columns	1,996	2,998	1,195	3,096
Optical Precinct	510	942	436	1,120
Opt. Prec.—Columbia, Escambia	339	1,093	528	1,723
Hand (Union)	19	18	47	62

Ratio of Allocated Ballots to Certified Vote Counts

	Two Marks		Multiple	
	Bush	Gore	Bush	Gore
Tabulation				
Votomatic—Duval	0.032	0.079	0.010	0.052
Votomatic—Miami-Dade	0.007	0.016	0.004	0.017
Votomatic—Palm Beach	0.015	0.040	0.005	0.014
Votomatic—Other	0.002	0.008	0.001	0.005
Datavote—One Page	0.011	0.023	0.017	0.060
Datavote—Two Pages	0.019	0.038	0.015	0.052
Optical Central—One Column	0.005	0.015	0.009	0.025
Optical Central—Two Columns	0.021	0.039	0.013	0.040
Optical Precinct	0.001	0.001	0.000	0.001
Opt. Prec.—Columbia, Escambia	0.004	0.023	0.006	0.036
Hand (Union)	0.008	0.013	0.020	0.044

Estimated True Votes Among the Overvotes, NORC Data

	Two Marks		Multiple		Total	
	Bush	Gore	Bush	Gore	Bush	Gore
Tabulation						
Votomatic	3,184	16,944	980	6,421	4,164	23,364
Votomatic—Duval	3,586	7,168	728	4,609	4,314	11,777
Datavote—One Page	71	284	20	603	91	887
Datavote—Two Pages	225	283	106	385	331	668
Opt Central—One Col	185	485	314	709	499	1,194
Opt Central—Two Col	653	2,331	180	2,209	833	4,541
Optical Precinct	285	807	92	893	378	1,701
Columbia, Escambia	141	936	188	1,397	329	2,333
Total	8,330	29,238	2,608	17,226	10,939	46,465

- **usability**

- **ballots in the 2003 California governor recall election**

OFFICIAL BALLOT / 正式選票

STATEWIDE SPECIAL ELECTION / 全州特別選舉

CITY AND COUNTY OF SAN FRANCISCO / 三藩市市縣

TUESDAY, OCTOBER 7, 2003 / 2003年10月7日星期二

ASSEMBLY DISTRICT 12

**INSTRUCTIONS TO VOTERS: COMPLETE THE ARROW POINTING TO YOUR CHOICE LIKE THIS:
TO VOTE FOR A QUALIFIED WRITE-IN CANDIDATE, WRITE THE PERSON'S NAME ON THE BLANK LINE
PROVIDED AND COMPLETE THE ARROW.**

選民指南：請將指向你選擇的箭頭畫線連接起來，如圖所示。
投選合格寫入候選人時，請在提供的空位上寫上候選人姓名，並將箭頭畫線連接起來。

STATE - 州					
Shall GRAY DAVIS be recalled (removed) from the office of Governor?					
是否應該將 GRAY DAVIS 從州長職務罷免（免職）？	YES/贊成 ←	NO/反對 ←			
Candidates to succeed GRAY DAVIS as Governor if he is recalled:					
如果 GRAY DAVIS 被罷免， 州長的繼任候選人：					
Vote for One/請選一名					
MICHAEL J. WOZNIAK Retired Police Officer 邁克爾·J·沃茲尼亞克 退休警員	Democratic 民主黨	DANIEL WATTS College Student 丹尼爾·沃茲 大學學生	Green 綠黨		
MIKE MCNEILLY Artist 邁克·麥克尼利 藝術家	Republican 共和黨	BOB MCCLAIN Civil Engineer 鮑勃·麥克萊因 土木工程師	Independent 無黨派	TOM MCCLINTOCK State Senator 湯姆·麥克林托克 州參議員	Republican 共和黨
MIKE P. MCCARTHY Used Car Dealer 邁克·P·麥卡錫 二手車行東主	Independent 無黨派	JONATHAN MILLER Small Business Owner 喬納森·米勒 小商業東主	Democratic 民主黨	CARL A. MEHR Businessman 卡爾·A·梅爾 商人	Republican 共和黨
ARIANNA HUFFINGTON Author/Columnist/Mother 阿麗亞娜·哈芬頓 作家/專欄作家/母親	Independent 無黨派	SCOTT A. MEDNICK Business Executive 斯科特·A·麥得尼克 商業主管	Democratic 民主黨	DORENE MUSILLI Parent/Educator/Businesswoman 多琳·莫西里 家長/教育者/女商人	Republican 共和黨
ART BROWN Film Writer/Director 亞特·布朗 電影編劇/導演	Democratic 民主黨	JOEL BRITTON Retired Meat Packer 喬爾·布里頓 退休屠宰廠工人	Independent 無黨派	ARIANNA HUFFINGTON Author/Columnist/Mother 阿麗亞娜·哈芬頓 作家/專欄作家/母親	Independent 無黨派
JOEL BRITTON Retired Meat Packer 喬爾·布里頓 退休屠宰廠工人	Independent 無黨派	AUDIE BOCK Educator/Small Businesswoman 奧迪·波克 教育者/小商業女東主	Democratic 民主黨	VIK S. BAJWA Businessman/Father/Entrepreneur 韋克·S·巴吉瓦 商人/父親/企業家	Democratic 民主黨
AUDIE BOCK Educator/Small Businesswoman 奧迪·波克 教育者/小商業女東主	Democratic 民主黨	BADI BADIOZAMANI Entrepreneur/Author/Executive 巴迪·巴迪奧查馬尼 企業家/作家/主管	Independent 無黨派	VIP BHOLA Attorney/Businessowner 韋普·波拉 律師/商業東主	Republican 共和黨
VIK S. BAJWA Businessman/Father/Entrepreneur 韋克·S·巴吉瓦 商人/父親/企業家	Democratic 民主黨	JOHN W. BEARD Businessman 約翰·W·比爾德 商人	Republican 共和黨	ED REYER	Republican 共和黨
BADI BADIOZAMANI Entrepreneur/Author/Executive 巴迪·巴迪奧查馬尼 企業家/作家/主管	Independent 無黨派	ED REYER	Republican 共和黨		

- **usability**

- **ballots in the 2000 presidential election in Ohio**

**OFFICIAL PRESIDENTIAL BALLOT
GENERAL ELECTION - NOVEMBER 2, 2004
CUYAHOGA COUNTY**

<p align="center">For President and Vice-President</p> <p>To Vote for President and Vice-President, punch the hole beside the number for the set of candidates of your choice. Your vote will be counted for each of the candidates for presidential elector whose names have been certified to the Secretary of State (Vote not more than ONCE)</p>	<p>For President: MICHAEL A. PEROUTKA</p> <p align="center">Other-Party Candidate</p>	<p>For Vice-President: and CHUCK BALDWIN</p>
	<p>For President: MICHAEL BADNARIK</p> <p align="center">Other-Party Candidate</p>	<p>For Vice-President: and RICHARD V. CAMPAGNA</p>
	<p>For President: GEORGE W. BUSH</p> <p align="center">Republican</p>	<p>For Vice-President: and DICK CHENEY</p>
	<p>For President: JOHN F. KERRY</p> <p align="center">Democratic</p>	<p>For Vice-President: and JOHN EDWARDS</p>
<p>For President: CANDIDATE DISQUALIFIED</p>	<p>For Vice-President: CANDIDATE DISQUALIFIED</p>	

**OFFICIAL GENERAL ELECTION BALLOT
BROWARD COUNTY, FLORIDA
NOVEMBER 2, 2004**

PRESIDENT AND VICE PRESIDENT

PRESIDENT AND VICE PRESIDENT

(Vote for ONE)

George W. Bush Dick Cheney	REP	<input type="checkbox"/>
John F. Kerry John Edwards	DEM	<input type="checkbox"/>
Michael A. Peroutka Chuck Baldwin	CPF	<input type="checkbox"/>
Michael Badnarik Richard U. Campagna	LIB	<input type="checkbox"/>
David Cobb Patricia LaMarche	GRE	<input type="checkbox"/>
James Harris Margaret Trowe	SMP	<input type="checkbox"/>
Walter F. Brown Mary Alice Herbert	SPF	<input type="checkbox"/>
Ralph Nader Peter Miguel Camejo	REF	<input type="checkbox"/>

The Palm Beach County Butterfly Ballot

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TURN PAGE TO CONTINUE VOTING →

- **technologies**

- **paper: Mexico 2006**

Frequency of Digits according to Benford's Law

digit	0	1	2	3	4	5	6	7	8	9
first	—	.301	.176	.124	.097	.079	.067	.058	.051	.046
second	.120	.114	.109	.104	.100	.097	.093	.090	.088	.085

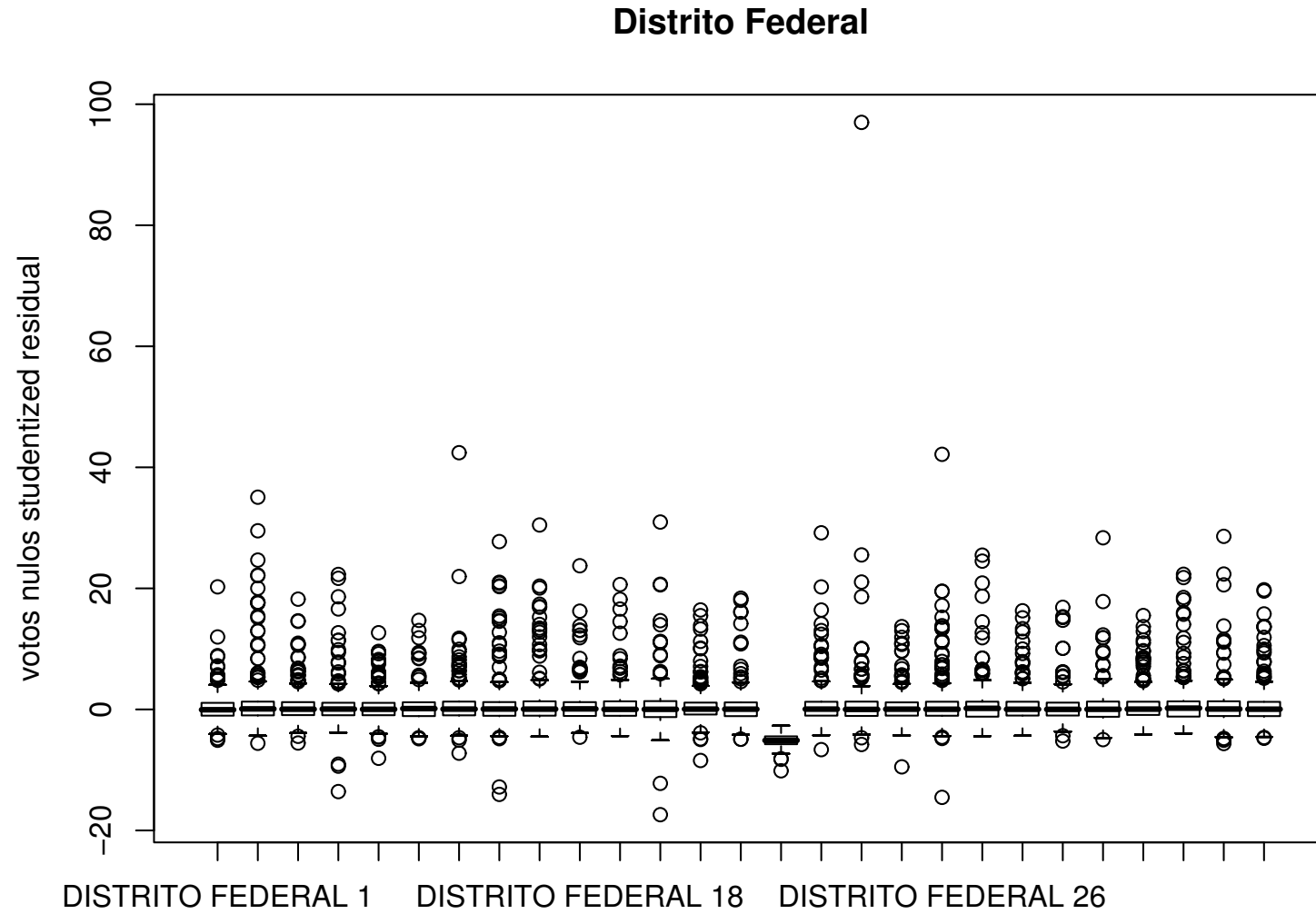
Mexico 2006 Presidential Vote Second-digit Benford's Law Tests:
Secciones

State	n	PAN	PRD	PRI	NA	ASDC
All	64,679	48.1	25.3	109.0	1254.8	16.6
Baja California	1,525	12.0	34.9	13.4	49.5	20.4
Chiapas	1,537	16.1	15.3	5.6	44.6	12.8
Distrito Federal	5,560	10.9	26.9	42.6	178.9	61.6
Guanajuato	3,043	13.7	7.2	25.4	117.9	6.6
Guerrero	2,767	14.4	8.8	28.0	65.8	11.9
Mexico	6,193	51.4	49.8	15.0	238.4	18.0
Nayarit	879	5.6	7.2	8.8	23.7	10.6
Nuevo Leon	2,148	8.6	11.8	9.3	7.9	7.3
Oaxaca	2,456	16.3	9.4	14.4	38.9	19.8
Veracruz	4,736	14.0	9.5	19.1	75.2	28.7

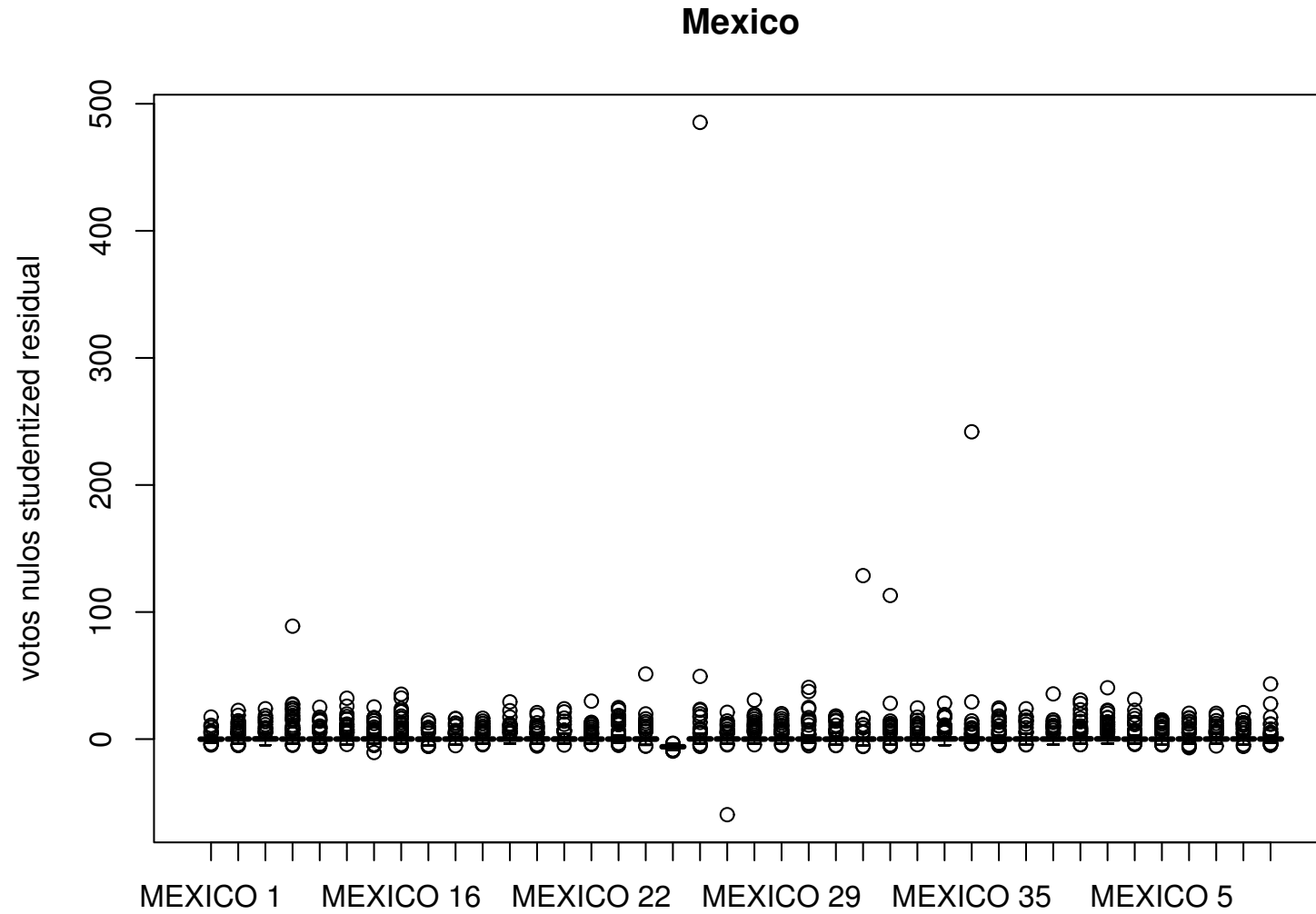
Districts that are FDR rejects for the 2BL test for multiple offices:

District	P	S	D	District	P	S	D
CHIHUAHUA.2		x	x	MEXICO.11	x		x
CHIHUAHUA.4	x	x	x	MEXICO.17	x		x
CHIHUAHUA.6	x	x	x	MEXICO.31	x		x
CHIHUAHUA.8		x	x	MICHOACAN.3	x		x
DISTRITO FEDERAL.13	x	x	x	SINALOA.2	x		x
DISTRITO FEDERAL.15		x	x	SINALOA.4		x	x
DISTRITO FEDERAL.4	x		x	SONORA.5		x	x
DISTRITO FEDERAL.7	x	x	x	VERACRUZ.3	x	x	x
DISTRITO FEDERAL.9		x	x	VERACRUZ.13	x	x	
GUANAJUATO.4	x	x		VERACRUZ.16		x	x
GUERRERO.4	x	x		VERACRUZ.17		x	x
JALISCO.8	x	x					

Votos Nulos Residuals in the 2006 Mexican Presidential Election

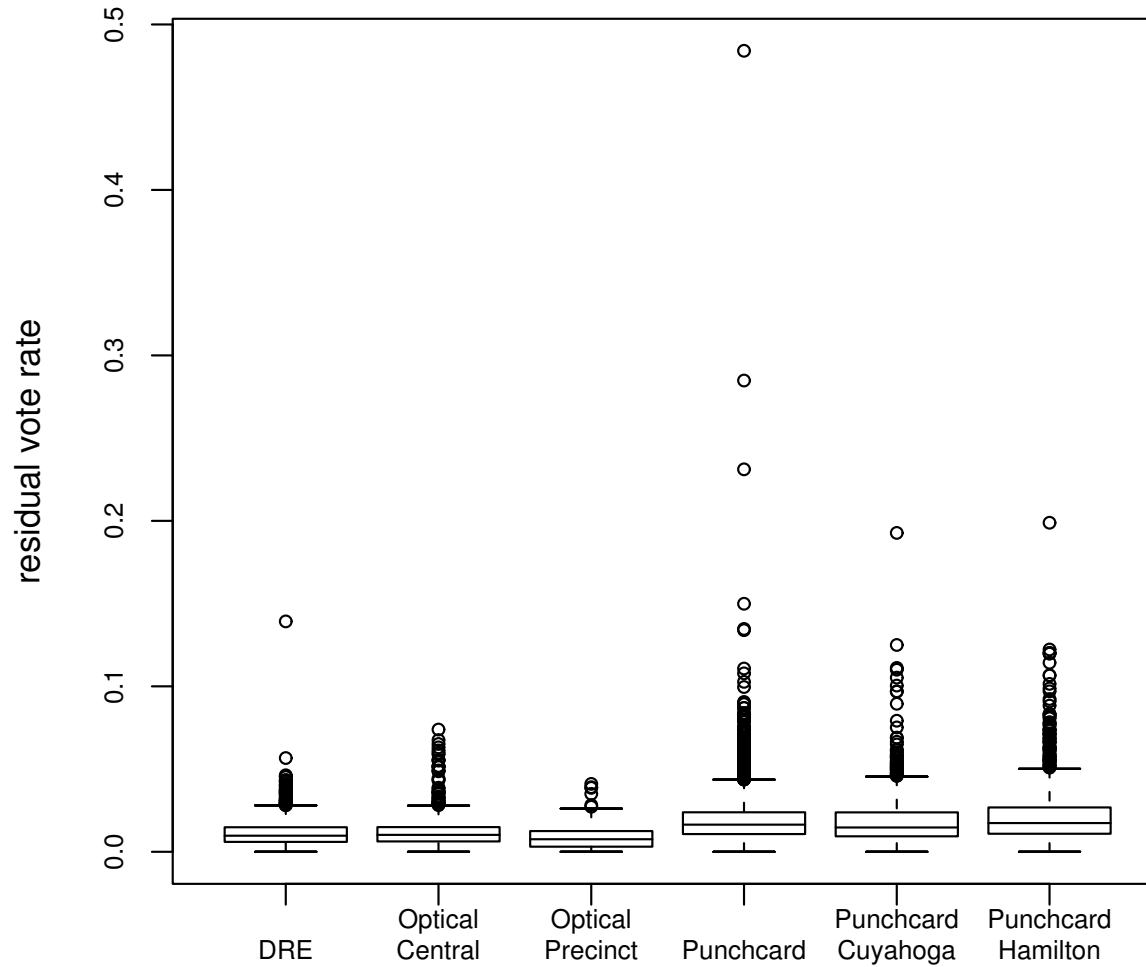


Votos Nulos Residuals in the 2006 Mexican Presidential Election



- **technologies**
 - **Ohio 2004**

Residual Vote Rate in Ohio 2004 Precincts by Machine Type



Median Residual Vote Rates Among the Residual Vote Outliers,
Ohio 2004 Precincts

Technology	Median Rate	
	Outliers	Rest
DRE	0.0290	0.0094
Optical Central	0.0409	0.0099
Optical Precinct	0.0240	0.0067
Punchcard	0.0593	0.0159

Ohio, 2004, Kerry versus Bush: 2002 Gubernatorial Vote Regressor

Variable	Precincts		
	Coef.	SE	<i>t</i> -ratio
(Intercept)	0.456	0.00589	77.5
Logit(Democratic Vote in 2002)	1.040	0.00627	166.0

Variable	Wards		
	Coef.	SE	<i>t</i> -ratio
(Intercept)	0.64	0.0224	28.6
Logit(Democratic Vote in 2002)	1.04	0.0266	39.1

Notes: Robust (tanh) overdispersed binomial regression estimates.

For each precinct or ward, the dependent variable counts the number of votes for Kerry versus the number of votes for Bush.

Precincts: LQD $\sigma = 2.98$; tanh $\sigma = 2.87$; $n = 5,384$; 17 outliers.

Wards: LQD $\sigma = 9.09$; tanh $\sigma = 8.91$; $n = 357$; no outliers.

Outliers: Vote for Kerry versus Bush: 2002 Gubernatorial Vote
Regressor

County	Code	SRes	County	Code	SRes
Butler	AFD	-4.55	Hamilton	AQM	4.18
Cuyahoga	ABE	-5.12	Hamilton	BDN	810.96
Cuyahoga	AZY	512.89	Hamilton	BDQ	691.59
Cuyahoga	CQY	-4.79	Licking	ACV	4.75
Cuyahoga	CRG	-6.56	Licking	ACY	6.55
Cuyahoga	CRY	4.28	Lorain	AKV	-4.07
Cuyahoga	CWY	-4.22	Miami	AAN	-8.28
Greene	AHJ	4.52	Tuscarawas	AAX	-4.82
Hamilton	APT	4.37			

- **technologies**
 - **electronic: Florida 2004**

Florida Constitutional Amendments on the Ballot in 2004

		Yes	No
1	Parental Notification of a Minor's Termination of Pregnancy	4,639,635	2,534,910
2	Constitutional Amendments Proposed by Initiative	4,574,361	2,109,013
3	The Medical Liability Claimant's Compensation Amendment	4,583,164	2,622,143
4	Authorizes Voters to Approve Slot Machines in Parimutuel Facilities	3,631,261	3,512,181
5	Florida Minimum Wage Amendment	5,198,514	2,097,151
6	Repeal of High Speed Rail Amendment	4,519,423	2,573,280
7	Patients' Right to Know About Adverse Medical Incidents	5,849,125	1,358,183
8	Public Protection from Repeated Medical Malpractice	5,121,841	2,083,864

Miami-Dade Election Day Second-digit Benford's Law Tests

item	Benf.	equal	item	Benf.	equal
Bush	7.9	10.8	Am. 4 Yes	3.3	9.0
Kerry	9.5	14.4	Am. 4 No	5.7	15.4
Martinez	8.9	10.8	Am. 5 Yes	17.9	19.6
Castor	12.0	12.8	Am. 5 No	5.8	23.3
Am. 1 Yes	2.5	8.0	Am. 6 Yes	4.3	10.2
Am. 1 No	5.5	15.5	Am. 6 No	9.1	11.3
Am. 2 Yes	16.7	23.6	Am. 7 Yes	17.1	16.0
Am. 2 No	7.2	16.4	Am. 7 No	8.4	16.5
Am. 3 Yes	3.3	8.5	Am. 8 Yes	12.7	25.3
Am. 3 No	12.9	12.7	Am. 8 No	6.5	10.6

Note: $n = 757$ precincts. Pearson chi-squared statistics, 9 df.

Miami-Dade Election Day Second-digit Benford's Law Tests

item	Benf.	equal	item	Benf.	equal
Bush	17.2	39.5	Am. 4 Yes	43.5	14.4
Kerry	44.0	13.1	Am. 4 No	25.4	15.3
Martinez	11.5	29.2	Am. 5 Yes	57.6	2.9
Castor	12.7	43.5	Am. 5 No	25.6	135.6
Am. 1 Yes	43.6	12.6	Am. 6 Yes	29.7	16.3
Am. 1 No	19.8	31.9	Am. 6 No	15.3	30.8
Am. 2 Yes	38.7	27.3	Am. 7 Yes	53.2	21.1
Am. 2 No	11.9	48.8	Am. 7 No	136.7	318.7
Am. 3 Yes	78.0	5.5	Am. 8 Yes	54.2	8.3
Am. 3 No	25.7	26.8	Am. 8 No	23.2	29.1

Note: $n = 5,326$ precinct-machines. Chi-squared statistics, 9 df.

Miami-Dade Machine Randomization False Discovery Rate Tests

Candidate	Election Day			Early Voting		
	precincts	items	rejects	site-days	items	rejects
Kerry	735	13,982	4	1,176	15,094	0
Castor	736	14,002	5	1,197	15,276	3
Am. 1 yes	743	14,068	6	1,302	16,318	0
Am. 1 no	737	14,020	4	1,272	16,078	0
Am. 2 yes	742	14,062	6	1,295	16,288	4
Am. 2 no	737	14,018	1	1,228	15,802	2
Am. 3 yes	740	14,038	8	1,290	16,156	1
Am. 3 no	741	14,054	0	1,290	16,144	0

Miami-Dade Machine Randomization False Discovery Rate Tests

Candidate	Election Day			Early Voting		
	precincts	items	rejects	site-days	items	rejects
Am. 4 yes	741	14,052	2	1,313	16,418	0
Am. 4 no	739	14,034	0	1,297	16,272	0
Am. 5 yes	736	13,988	0	1,168	15,174	1
Am. 5 no	727	13,856	0	1,082	14,278	0
Am. 6 yes	742	14,062	1	1,308	16,394	0
Am. 6 no	742	14,062	0	1,271	16,122	0
Am. 7 yes	732	13,966	0	1,144	15,044	0
Am. 7 no	720	13,812	0	1,018	13,812	1
Am. 8 yes	739	14,034	0	1,272	16,086	0
Am. 8 no	735	14,000	0	1,219	15,678	2

Broward Machine Randomization False Discovery Rate Tests

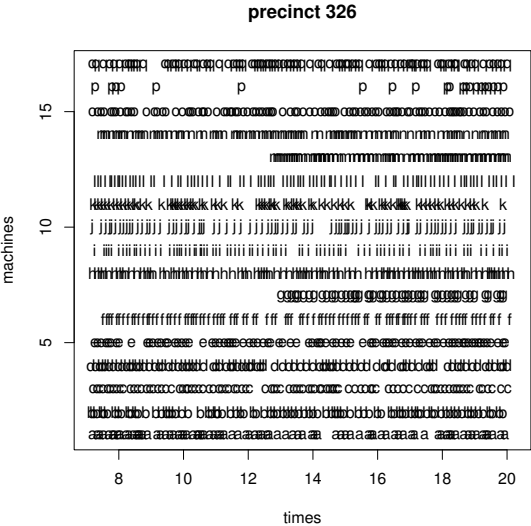
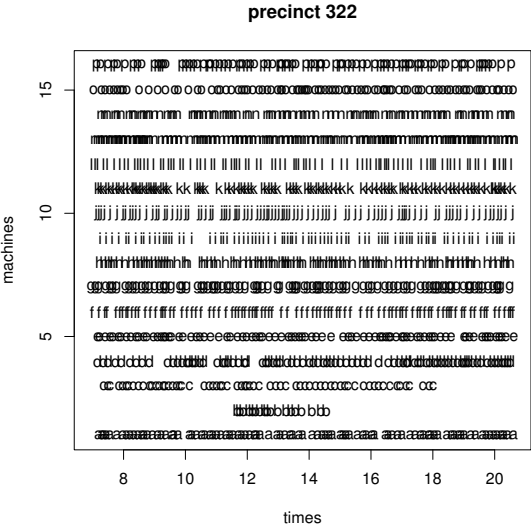
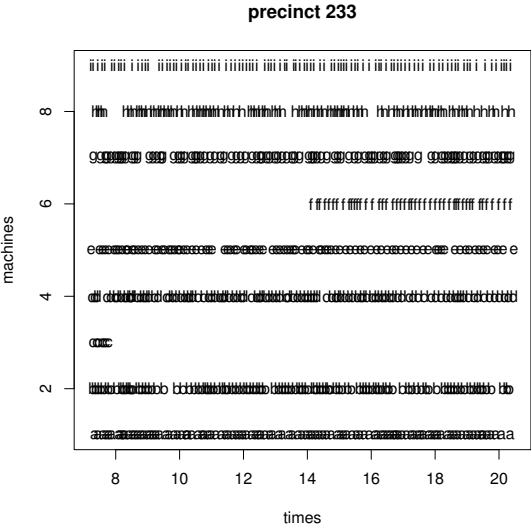
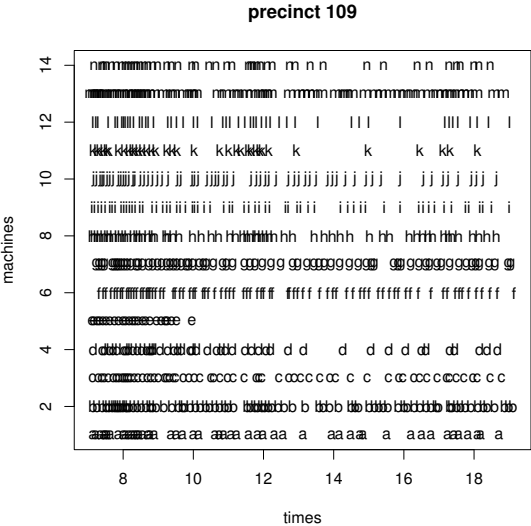
Candidate	Election Day			Early Voting		
	precincts	items	rejects	site-days	items	rejects
Kerry	765	10,578	0	30	220	0
Castor	764	10,572	5	30	220	0
Am. 1 yes	767	10,586	0	30	220	0
Am. 1 no	766	10,580	0	30	220	0
Am. 2 yes	764	10,572	0	30	220	0
Am. 2 no	763	10,566	0	30	220	0
Am. 3 yes	765	10,576	2	30	220	0
Am. 3 no	765	10,576	5	30	220	0

Broward Machine Randomization False Discovery Rate Tests

Candidate	Election Day			Early Voting		
	precincts	items	rejects	site-days	items	rejects
Am. 4 yes	766	10,584	6	30	220	0
Am. 4 no	766	10,584	1	30	220	0
Am. 5 yes	757	10,532	7	30	220	1
Am. 5 no	756	10,526	1	30	220	1
Am. 6 yes	764	10,574	1	30	220	0
Am. 6 no	764	10,574	0	30	220	0
Am. 7 yes	759	10,544	4	30	220	1
Am. 7 no	757	10,532	0	30	220	6
Am. 8 yes	761	10,556	1	30	220	0
Am. 8 no	760	10,550	3	30	220	0

- **policy and practice**
 - **auditability: Florida 2004**

Times When Votes Were Cast on Machines in Selected Precincts on Election Day, Miami-Dade County



- **policy and practice**
 - **machine allocation: Ohio 2004**

Franklin County, Ohio, 2004, Voting Machine Allocations by
Precinct Racial Composition

Precinct Racial Composition	Counts per Voting Machine			
	Registered Voters	Ballots Cast	Ballots Cast per Hour	Active Voters November
Low Prop. African American	262	170	13	213
Medium Prop. African American	305	173	12	226
High Prop. African American	324	164	11	242

Franklin County, Ohio, 2004, Polls Open Elapsed Time Given
Machines per Registered Voter and Proportion African American
Regressors

Variable	Coef.	SE	<i>t</i> -ratio
(Intercept)	1.818847	0.053773	33.83
Log(Machines per Registered Voter)	-0.141308	0.009480	-14.90
Proportion African American	0.099189	0.008725	11.37

Voter Turnout: Polls Open Elapsed Time, Machines per Registered
Voter and Proportion African American Regressors

Expected Voter Turnout at Quartiles of the

Prop. African American	Machine Ratio			Polls Open Time		
	25%	50%	75%	25%	50%	75%
Low	0.635	0.650	0.666	0.653	0.650	0.646
Medium	0.516	0.565	0.608	0.560	0.565	0.581
High	0.460	0.506	0.546	0.490	0.506	0.524

- **policy and practice**
 - **provisional ballots: Ohio 2004**

- **Ohio 2004, challengers and provisionals:
video_the_vote_ohio_2.mov**
- **provisional ballot study**

Provisional Ballots and Attributes Related to Residential Mobility

Attributes	Percent Provisional	Confidence (+ or -)	Percentage of Voters
Ever Voted in Ohio? Yes	3.1	0.2	89.6
Ever Voted in Ohio? No	9.4	7.1	7.3
Moved Since Last Voted in Ohio? Yes	11.4	4.4	15.0 ^a
Moved Since Last Voted in Ohio? No	1.7	0.2	84.2 ^a
Voted in Past at Polling Place	1.7	0.2	77.7
No Vote in Past at Polling Place	11.2	3.9	19.4
At Current Address: Up to Five Years	9.1	2.7	28.2
At Current Address: More than Five	1.3	0.2	67.3
Registered to Vote in 2004	26.5	12.2	3.0
Already Registered	2.5	0.2	96.1

Notes: ^a Percent of the 89.6% of voters previously voting in Ohio.

Provisional Ballots and Election Experiences

Attributes	Percent Provisional	Confidence (+ or -)	Percentage of Voters
Requested Absentee Ballot	2.4	1.0	17.2
No Absentee Ballot	3.7	0.3	82.4
<hr/>			
Voted for Kerry	4.2	0.6	51.4
Voted for Bush	4.1	1.4	23.3
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Party Identification: Democrat	3.7	0.6	53.3
Party Identification: Republican	4.9	1.9	16.8
Party Identification: Other	2.5	1.0	16.6
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Registration Questioned	19.2	4.6	9.8
Registration Not Questioned	1.9	0.2	80.1

Provisional Ballots and Personal Attributes

Attributes	Percent Provisional	Confidence (+ or -)	Percentage of Voters
Age: 34 Years or Younger	11.0	5.1	8.7
Age: 35-55 Years	5.3	1.6	28.3
Age: 55 Years or Older	1.6	0.4	52.1
White	3.5	0.5	54.8
African American	4.1	1.0	29.7
Male	3.2	0.7	48.7
Female	3.8	0.5	51.3
Education: High School or Less	3.4	0.7	43.5
Education: Some College	3.9	1.2	23.2
Education: College Graduate	4.4	1.5	18.6
Education: Post-graduate	2.9	1.8	9.3

- an assortment of statistical tools can help assess how voting “machines” affect voting accuracy, transparency, fraud, etc.
- voting “machines” need to be considered in the context of other administrative decisions and practices
- how voters, candidates, election officials and others behave affects “machine” performance
- statistical assessments always depend on nonquantitative knowledge and can only go so far