The Impact of Changing Voting Systems: Lessons Learned from Florida and Michigan

Michael W. Traugott
University of Michigan

University of Maryland	**Paul Herrnson**
	Ben Bederson
Georgetown University	**Michael Hanmer**
University of Michigan	**Frederick Conrad**
University of Rochester	**Richard G. Niemi**

April 23, 2007

This presentation is derived from a collaborative project supported by the National Science Foundation and the Carnegie Corporation.

Purpose of the Study

Significant change in voting technology since 2000 raises two important research questions

1) **Were problems with residual votes (undervotes, overvotes, and uncounted ballots) reduced or eliminated?**
2) **Did the shift in technology have any "unintended consequences" for voting behavior?**

Can new methodological approaches be used successfully to address these questions in a reliable fashion that accounts for the nature of available data?

Design of Natural Experiment Study

We wanted to look at “real world” results of switching to new voting equipment

1. Did voters do “better” in places where there was new technology compared to old in 2000 compared to 2004?
2. In the same places where there were changes to new technology from 2000 to 2004, were the results different in expected ways than in places that used the same technology?

Needed to select places that experienced change and had small unit data available for analysis

Natural Experiment Analysis

We have developed and validated an ecological regression approach to looking at changes across elections

Main impact measures are:

- Residual votes (errors)
- Straight and split-ticket voting
- Roll off

Data and Methods

- Natural experiments of shifting technology under Help America Vote Act (HAVA)
- Comparison of Florida and Michigan
    - Different types of data and jurisdictions
    - Florida is a “many to many” system
    - Michigan is a “many to few” system
- Employ both descriptive statistics and ecological inference (Thomsen 1987), and we look at the data cross-sectionally and over time

Residual Votes Declined with the Implementation of "New" Technology

Mean Residual Votes in the 2000 and 2004 Elections by Equipment for Selected Florida Precincts, and Michigan Townships

FLORIDA

	President 2000		President 2004		Senate 2000		Senate 2004	
Equipment	Mean	N	Mean	N	Mean	N	Mean	N
Lever	0.31%	39	NA	NA	16.68%	39	NA	NA
PC	6.33%	1,508	NA	NA	7.25%	1,508	NA	NA
OS	2.02%	452	0.33%	971	2.81%	452	1.64%	971
DRE	NA	NA	0.56%	1,588	NA	NA	4.09%	1,588
Total	5.24%	1,999	0.47%	2,559	6.43%	1,999	3.16%	2,559

MICHIGAN

	President 2000		President 2004		Senate 2000		Senate 2004	
Equipment	Mean	N	Mean	N	Mean	N	Mean	N
Paper	2.22%	79	1.59%	19	6.50%	79	NA	NA
Lever	1.68%	210	1.05%	116	6.00%	210	NA	NA
PC	1.98%	342	2.00%	230	3.27%	342	NA	NA
OS	0.94%	710	0.65%	976	2.44%	710	NA	NA
Total	1.40%	1,346	0.94%	1,346	3.46%	1,346	NA	NA

Declines in Residual Votes Followed Shifts to "New" Technologies

Changes in Residual Votes in the 2000 and 2004 Elections by Changes in Equipment

Equipment Change	N	President 2000	President 2004	Difference	t-Score		Senate 2000	Senate 2004	Difference	t-Score
FLORIDA										
OS to OS	118	1.48%	0.30%	-1.18%	-10.93		3.03%	1.67%	-1.35%	-13.00
OS to DRE	139	4.66%	0.53%	-4.13%	-22.56		4.03%	3.04%	-0.99%	-5.98
PC to OS	187	9.76%	0.33%	-9.43%	-17.87		6.48%	1.79%	-4.69%	-22.46
PC to DRE	1029	5.71%	0.58%	-5.14%	-34.50		7.51%	4.20%	-3.30%	-16.46
MICHIGAN										
OS to OS	709	0.94%	0.66%	-0.28%	-2.93					
PC to PC	229	2.19%	1.82%	-0.37%	-5.00					
PC to OS	113	1.56%	0.42%	-1.14%	-14.13					
Lever to Lever	116	1.82%	1.05%	-0.76%	-1.79					
Lever to OS	94	1.50%	0.64%	-0.87%	-2.20					
Paper to OS	60	2.44%	0.94%	-1.50%	-3.32					
Paper to Paper	19	1.54%	1.59%	0.05%	0.09					

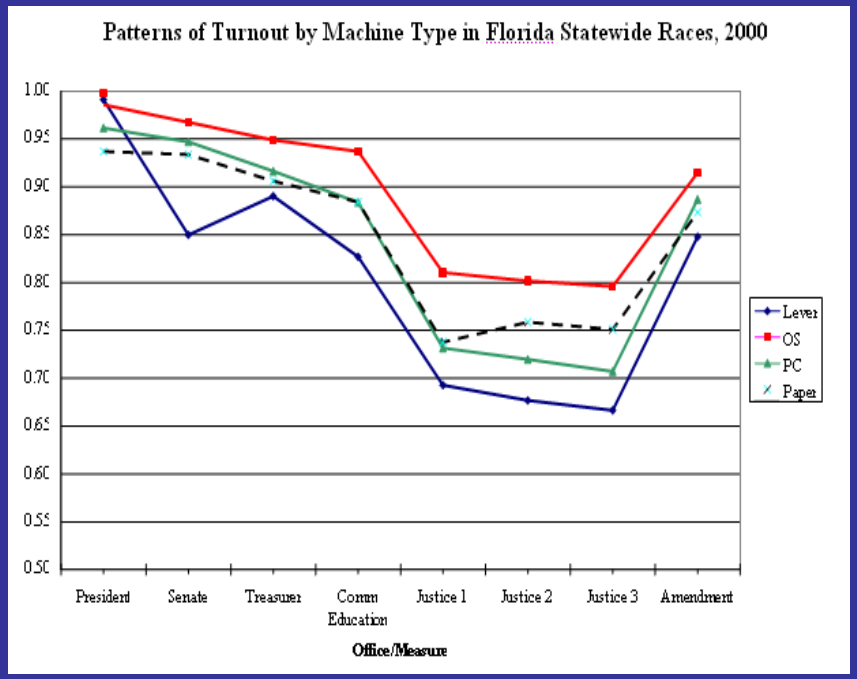
2000 Residual Voters Favored Kerry in 2004, Especially in Florida

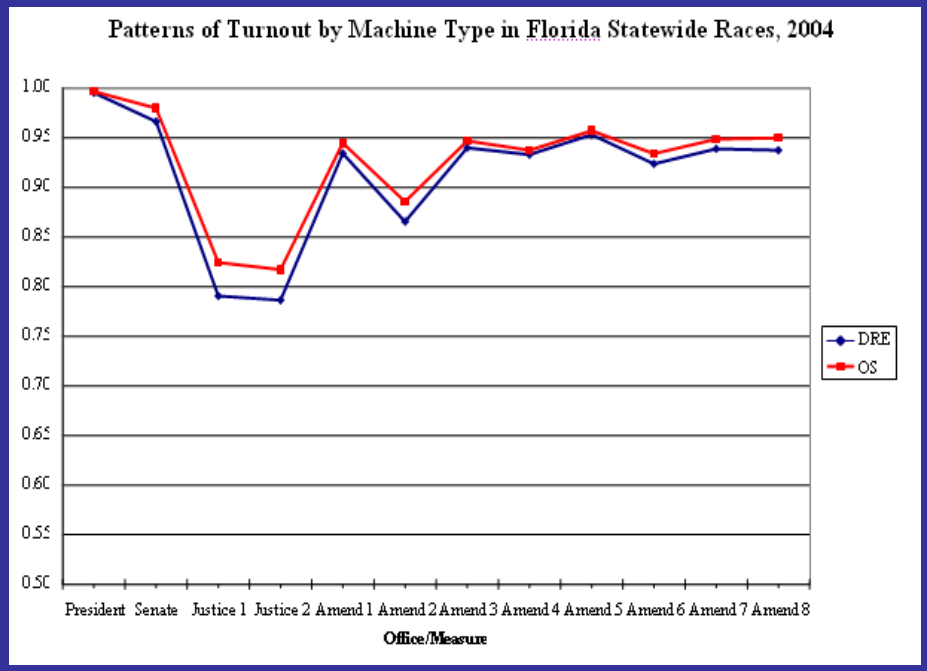
Presidential Voter Transition Rates in Florida and Michigan by Equipment Changes, 2000 to 2004

Florida Counties and Equipment Changes	Buchanan (2000) to Kerry (2004)	Residual (2000) to Residual (2004)
Manatee (OS to OS)	55.7%	0.3%
Charlotte (OS to DRE)	48.1%	0.5%
Lake (OS to DRE)	39.4%	0.5%
Duval (PC to OS)	34.7%	0.5%
Highlands (PC to OS)	28.7%	1.9%
Miami-Dade (PC to DRE)	54.9%	1.1%
Palm Beach (PC to DRE)	**73.0%**	1.0%

Michigan Equipment Changes		
Lever to Lever	14.9%	1.9%
Lever to OS	25.4%	0.8%
Paper to OS	9.3%	2.9%
OS to OS	17.4%	1.7%
PC to PC	14.9%	**8.6%**
PC to OS	22.7%	0.9%

Rolloff Rates in Florida Were Lowered with Replacement of Lever and Punch Card Machines





And they looked similar in Michigan

Conclusions

- Is the new election administration system working?
  - Shifts in technology led to dramatic reductions in residual votes
  - No evidence of unintended consequences
  - The methodology works well in the context of machine changes, even in diverse areas
- What happens if (when?) the new technology presents usability issues for segments of the population? (The young? The elderly? Those with limited computer experience?)
- What happens if the push for new technology outstrips the ability of local officials to deal with it, i.e. if the administration of elections has to be outsourced to manufacturers and consultants?

Conclusions

Researchers need additional data to pursue these questions, in order to understand how the new voting technology works and to help election administrators do their jobs

- ***Anonymized individual ballot images to understand roll-off, drop off, and spoiled ballots**
- ***Disaggregation of "residual" votes into undervotes, overvotes, and spoiled ballots**
- ***Small unit returns that correspond to other data sources about characteristics of those who vote there**
- ***Information on other attributes of the election administration system, such as the allocation of machines by type, available before the election**