

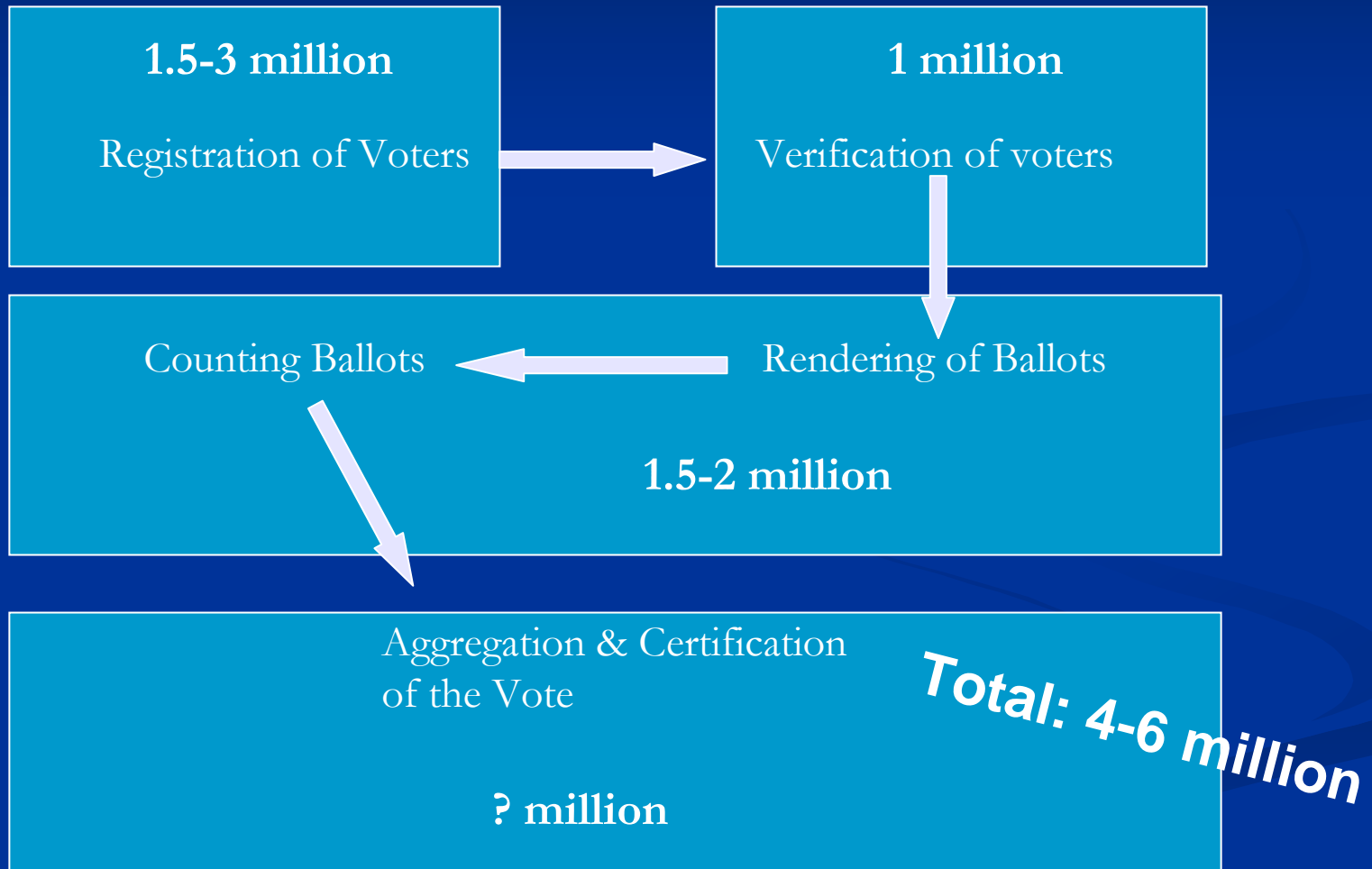
Found Votes since 2000

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Where are the Votes Lost?



How Do Machines Lose Votes?

- Bad, confusing interfaces
 - Features of specific machines
 - Caused by state & federal election laws
- Performance degradation (they break)

Residual Vote: A Measure of Performance

- $RV = \text{Blank votes} + \text{overvotes}$
- $RV / \text{turnout} = RV\%$
- Floor probably depends on race
 - around 0.5% in presidential elections
 - may be over 25% in judicial retention races
- Greatest value as a performance measure in examining differences

Change in Presidential Residual Vote Rates, 2000 to 2004

- 2000: 1.90%
- 2004: 1.06%
- States with big reductions:
 - FL: 2.9% to 0.4%
 - IL: 3.9% to 1.4%
 - GA: 3.5% to 0.4%
- States with small increases:
 - CT: 1.0% to 1.8%
 - NE: 1.4% to 1.8%
 - IN: 1.5% to 1.8%
- States that didn't report turnout in '00 and '04
 - AL, AR, CO, KS, LA, ME, MN, MS, MO, OK, PA, SC, TX

Change in Residual Vote Rates, by Upgrade Paths

Equip 2000	Equip2004	Resid. vote change	Voters (2004)
Punch	DRE	-1.61%	10.4m
Scan	DRE	-1.23%	4.4m
Punch	Scan	-1.09%	12.7m
All other changes		-1.05%	0.6m
Lever	Scan	-1.01%	0.9m
No change in equipment		-0.64%	56.5m
Lever	DRE	-0.35%	2.7m
Paper	Scan	+0.04%	163k

“New votes in 2004”

- 7 million total “new votes” counted in 2004
- 1 million estimated due to changes in voting technology
 - Estimate based on statistical analysis of 2000 and 2004 elections

Where Did These Improvements Come From?

- Machine effects
 - Improved interface
 - No more hanging chads
- Voting administration effects
 - Greater training of poll workers
 - Response of election officials to being scrutinized
 - Greater care by voters

What about 2006?

- Machine changes proceed apace
- Unclear what the VVPAT will do to the residual vote rate
- Estimates of machine-change-induced improvements will be more difficult to estimate due to variability of up-ballot races