What Makes Voters Turn Out: The Effects of Polls and Beliefs

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June, 2012

Introduction

Common features of elections:

- Uncertainty over majority-preferred alternative
- Much communication prior to elections (polls, media,...)
- Toss-up elections rare
  - Mulligan and Hunter (2000) - One of 100,000 (15,000) votes cast in U.S. elections (state elections) "mattered"

Observed behavior:

- Many vote (over 50% in U.S. elections)
- Many vote for perceived landslide winner
  - ANES 2008 - 70% of those predicting a large of win of their favored candidate reported voting
  - Target Group Index (TGI) Brazil 2003 - 13% agree with the statement "I always vote for the probable winner in an election"

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This Paper

Use an array of laboratory experiments to

- Gain Insights on the Cost-Benefit analysis voters consider
  - response to polls, polling information, and beliefs
- Understand the welfare effects of polls
- (Bonus) Observe how individuals respond to polls

Why Experiments?

- Allow for a wide range of preference distributions
- Allow tracking individual behavior (votes cast, response to polls) as a function of preferences
- Allow elicitation of beliefs regarding outcomes
- Fairly inexpensive way to test for the effects of information

Related Literature

Pivotal Model with Costly Participation

- Theory - Palfrey-Rosenthal (83) and Borgers (04)
- Experiments
  - Association between closeness and turnout
    Yes: Duffy-Tavits (08), Levine-Palfrey (07)
  - Minority turnout higher than majority turnout
    No: Duffy-Tavits (08), Grosser-Schram (10), Kartal (11)
    Yes: Levine-Palfrey (07)
  - Increasing participation costs reduces participation
    Yes: Cason-Mui (05), Kartal (11), Levine-Palfrey (07)

Polls

- Theory - Goeree-Grosser (07), Taylor-Yildrim (10)
- Experiments - Guarnaschelli-McKelvey-Palfrey (00), Grosser-Schram (10)

What's Different?

1. Elicit subjects' beliefs
   - direct test of the pivotal voter model
   - hard to get from field data
2. Inspect behavior in polls and response to its results
   - field data: polls affect preferences or participation rates?
3. Uncertainty over majority-preferred alternative
   - elections are particularly useful

Outline

- Theoretical Setup
- Experimental Design
- Results
- Conclusions

Setup: Goeree and Grosser (2007)

- N agents collectively choose red or blue
- **Preferences**
  - Two equally likely states: 0 (Blue jar) and 1 (Red jar)
  - In state 0: $Pr[B|0] = p$ and $Pr[R|0] = 1 - p$
  - In state 1: $Pr[B|1] = 1 - p$ and $Pr[R|1] = p$
  - If chosen color = own color then get V, o/w get 0
- **Information**
  - No Polls - agents know their preferences (B or R)
  - Perfect Polls - agents know their preferences and the state
- **Voting**
  - Fixed participation cost of $c > 0$
  - Agents can vote for red, vote for blue or abstain (free)
  - Simple majority

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No Polls

- Focus on symmetric Bayesian Nash Equilibria
- If an agent participates $\Rightarrow$ he votes for preferred color
- **Unique symmetric Bayesian Nash Equilibrium**
  - if $c > \bar{c}$ then nobody participates
  - if $c < \underline{c}$ then everybody participates
  - if $c \in (\underline{c}, \bar{c})$ then all agents participate with prob $\gamma^\star > 0$

$$\frac{V}{2} \cdot \sum_{k=0}^{N-1} \binom{\text{N-1}}{\text{k}} (\gamma^\star)^k (1-\gamma^\star)^{N-1-k} \cdot P_{\text{piv}}(k) = c$$

$\gamma^\star$ is decreasing in c, p and N

Perfect Polls

- Focus on quasi-symmetric Bayesian Nash Equilibria
- Suppose realized state is 0 (Blue jar)
- Need to specify the probability of voting for each type

- **Unique quasi-symmetric Bayesian Nash Equilibrium**
  - Majority voters participate with lower prob than minority
  - Elections are likely to be "toss-up" elections
  - Polls reduce total welfare
    - Stimulate minority to participate
    - More participation and majority less likely to win

Real Polls

- Individuals are free to report their intentions to vote
- Aggregate statistics are dispelled prior to voting decisions
- **Quasi-symmetric pure strategies at the polling stage**
- Babbling always part of an equilibrium
  - participation rates are as in No Polls
- Fully revealing
  - participation phase equivalent to Palfrey-Rosenthal (83)
  - may entail multiple equilibria
  - for our parameters, no selection is consistent with equilibrium
  - intuition: in Palfrey-Rosenthal, the larger the # of supporters of one alternative, the lower the participation rates $\Rightarrow$ incentive to misreport

Theory Summary

Pivotal Voter Model:

- Voters respond to the likelihood their vote would matter

Implications:

- Turnout is higher when prob of a close election is higher
- Info regarding distribution of preferences in the population (polls) induces minority to participate more
- Polls decrease welfare
  - Overall participation $\uparrow$ (costly)
  - Majority-preferred alternative wins less often

Experimental Design

	Number of Subjects	Groups	Group Size	Known Jar	Polls Run	Probablity of Belonging to Majority	Maximal Prize
No Polls	63	7	9	No	No	2/3	$2
Perfect Polls	72	8	9	Yes	No	2/3	$2
Lab Polls	63	7	9	No	Yes	2/3	$2

- We asked subjects to predict group composition.
- We asked subjects to predict vote outcomes.

- Experiments run at CASSEL with 198 subjects.

Experimental Design...

- The experiment consists of 20 periods.
- All subjects are divided into groups of 9 subjects (fixed).
- In each period, the computer picks one of two jars (both being equally likely) for your group:
  - the red jar contains two red balls and one blue ball
  - the blue jar contains two blue balls and one red ball
- Each subjects draws a ball from the selected jar (with replacement): draw's color is subject's **type**.
- Subjects do not know the types of other members but know that others types are drawn from the same jar as theirs.

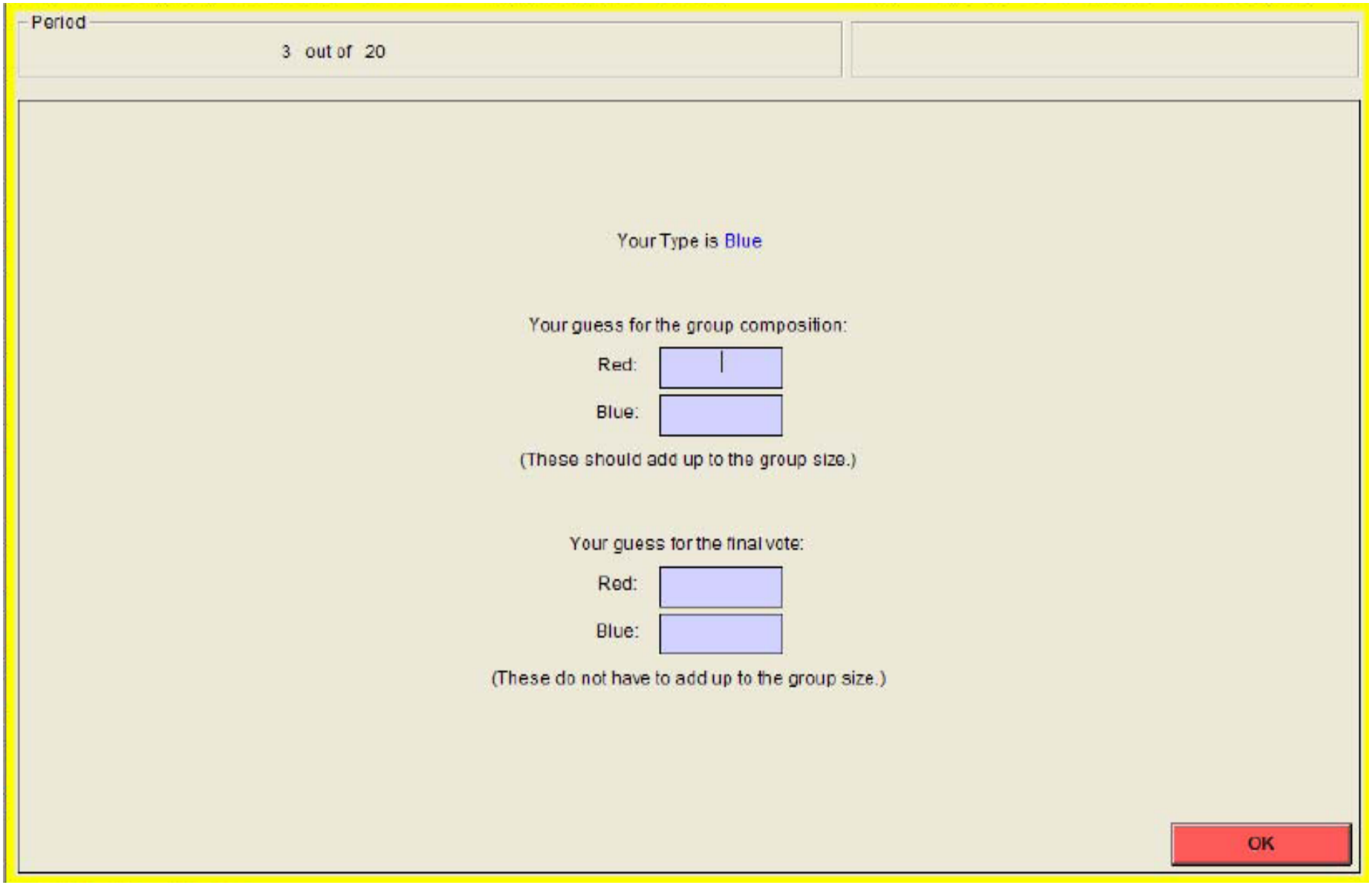
Experimental Design...

- Each person in the group chooses between:
  - Abstain
  - Vote blue
  - Vote red
- Cost of voting (same for all group members):
  - In 10 periods the cost of voting is 25 cents
  - In 10 periods the cost of voting is 50 cents
- The color receiving the majority of votes is the group's choice (ties are broken randomly).
- Payoff is 200 points if subject's type coincides with the groups choice (o/w zero points) minus voting cost if participated.

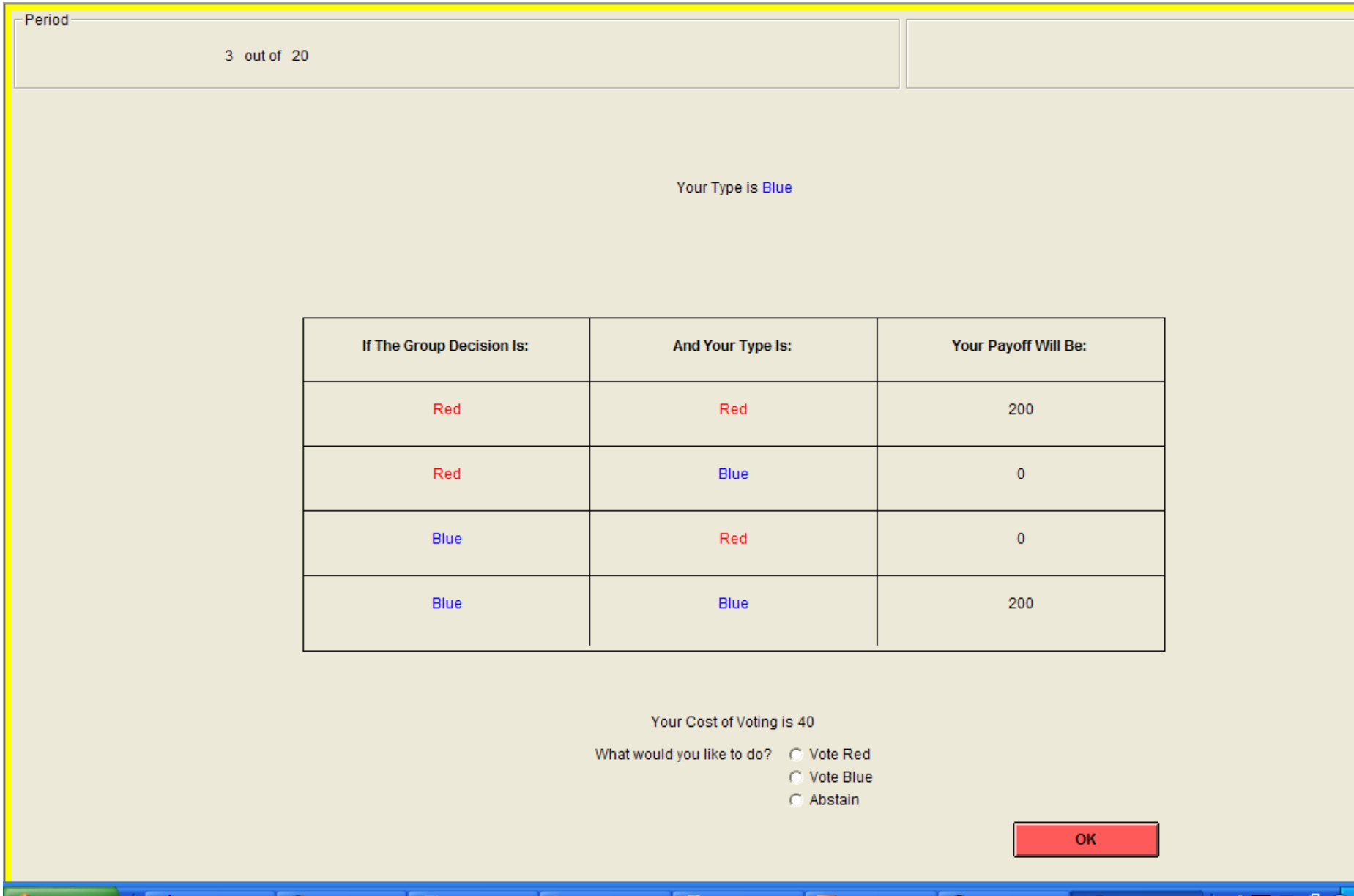
Experimental Design...

- Prior to voting decision, we ask two questions:
  1. Prior to making your choice, you will be asked to guess (number of reds, number of blues summing up to 9)
  2. The number of red and blue votes in your group (including your own, possibly summing up to <9)
- We randomly pick one of the guesses for each subject. If it is correct, subject gets a \$10 bonus.

Screenshot 1: Information



Screenshot 2: Decision



Screenshot 3: Feedback

Treatments

- Three information treatments:
  - **No Polls** - subjects know only their own type (B or R)
  - **Perfect Polls** - subjects know their type and the state (jar)
  - **Lab Polls**
    - subjects learn their type
    - subjects declare intended actions (the poll)
    - resulting overall statistics displayed (# of blue and red)
    - subjects choose whether to vote (and how) or abstain
- Two cost treatments:
  - 10 periods with **low** voting cost of 25 cents
  - 10 periods with **high** voting cost of 50 cents

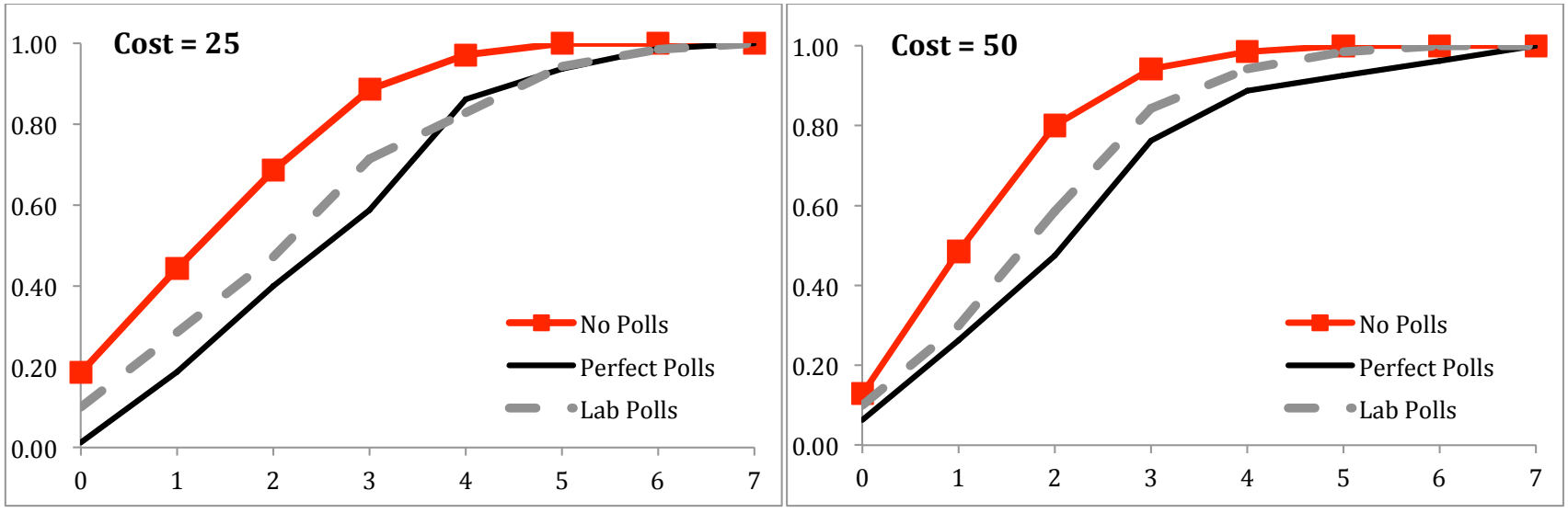
Results - Roadmap

- Aggregate outcomes of elections
  - prevalence of close elections
  - welfare
- Voting behavior
  - turnout
  - response to polls and beliefs
  - individual analysis
- Poll reports

Results Today - Robustness Notes

- No order effects - results aggregated across sessions
- Little learning - results from all periods

The Emergence of Toss-up Elections



- Polls generate less toss-up elections, more landslide elections
- Perfect Polls and Lab Polls generate similar distributions

Welfare

Two measures:

- Likelihood of selecting the majority-preferred alternative
- Overall utilitarian welfare of the group

Results - Welfare and Information

	Composition of Types					
	Type Difference of 1 or 3		Type Difference of 5, 7 or 9		Overall	
	cost = 25	cost = 50	cost = 25	cost = 50	cost = 25	cost = 50
Majority Favored*						
No Polls	70% [43]	69% [42]	96% [27]	96% [28]	80% [70]	80% [70]
Perfect Polls	85% [46]	76% [46]	97% [34]	97% [34]	90% [80]	85% [80]
Lab Polls	88% [43]	82% [49]	100% [27]	90% [21]	93% [70]	84% [70]
Overall Costs**						
No Polls	128 (6)	215 (16)	117 (6)	163 (15)	123 (4)	194 (11)
Perfect Polls	119 (6)	180 (10)	130 (7)	219 (13)	124 (4)	197 (8)
Lab Polls	120 (7)	207 (10)	118 (8)	171 (15)	119 (5)	196 (8)
Net Welfare**						
No Polls	869 (31)	775 (34)	1306 (43)	1245 (41)	1037 (36)	963 (38)
Perfect Polls	928 (22)	841 (31)	1311 (38)	1210 (37)	1091 (29)	998 (31)
Lab Polls	978 (26)	842 (29)	1319 (18)	1133 (64)	1110 (27)	929 (32)

* Square parentheses contain the number of relevant observations.

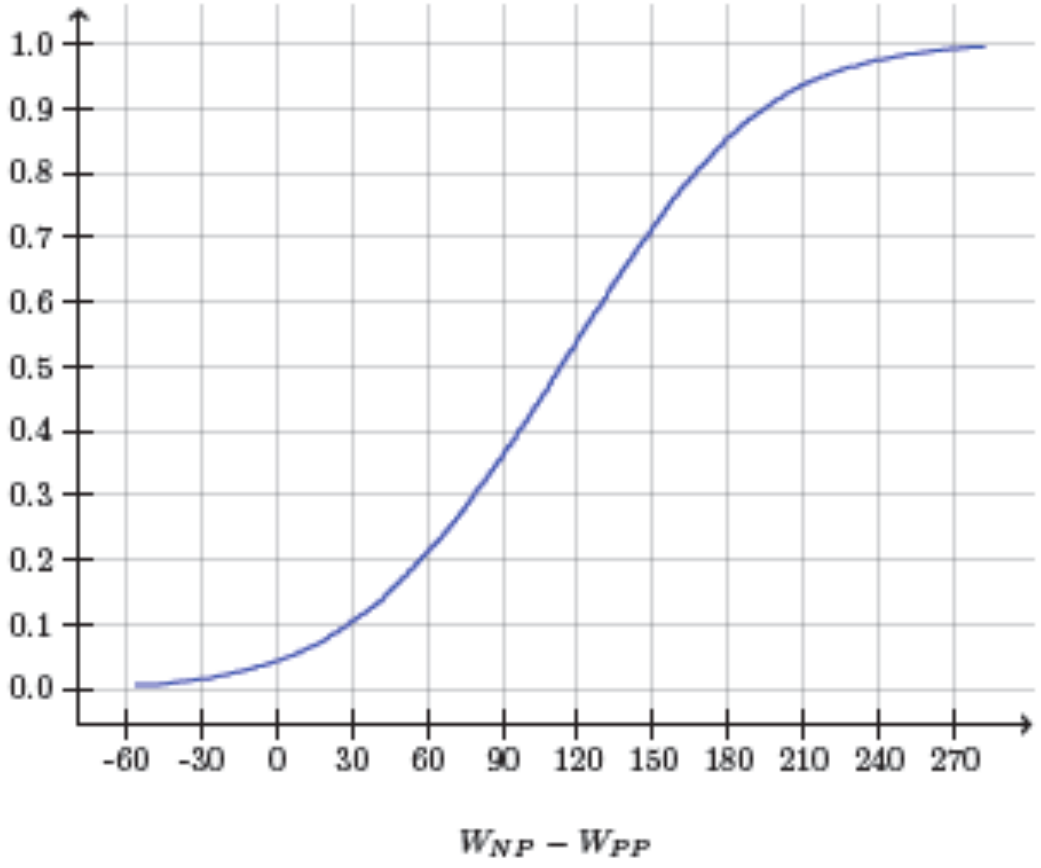
** Round parentheses contain the corresponding standard errors.

Results - Welfare and Information

- Information leads to better outcomes (particularly for close elections)
- Information does not raise costs (contrary to theory)
- Information does not reduce welfare (contrary to theory)
- Follow theoretical comparative statics with respect to costs

Statistical Note on Welfare 'Equality'

- Simulate 1,000,000 experiments with our number of observations and subjects using equilibrium strategies
- Look at CDF of welfare difference. For $c = 50$ (mean $= 112$):



Results - Participation Rates

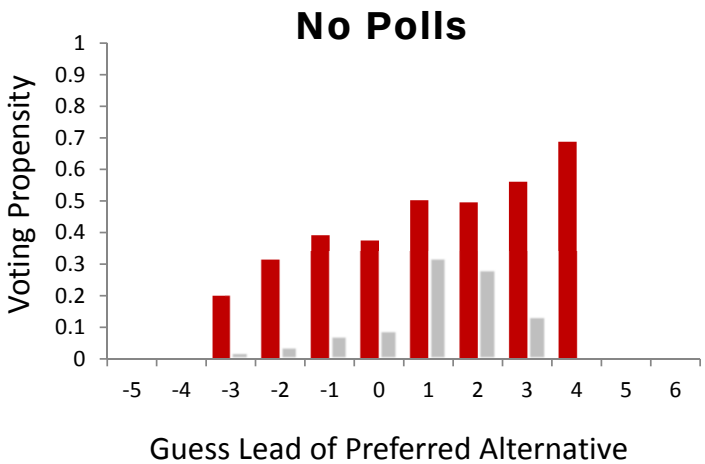
	No Polls		Perfect Polls				Lab Polls	
	Theory	Observed	Theory Majority	Theory Minority	Observed Majority	Observed Minority	Observed Majority*	Observed Minority*
Cost = 25	0.61	0.55	0.70	1.00	0.63	0.38	0.58	0.40
Cost = 50	0.21	0.43	0.19	0.39	0.52	0.27	0.50	0.31

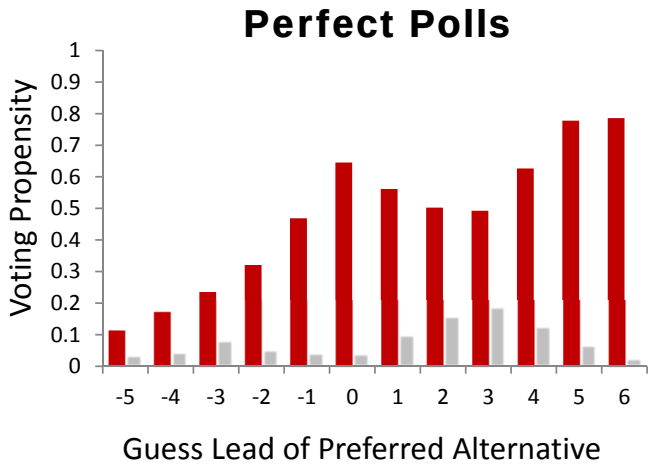
- Minority participate less than majority
- Polls increase majority participation, reduce minority participation
- Perfect Polls and Lab Polls yield similar results
- Follow theoretical comparative statics with respect to costs

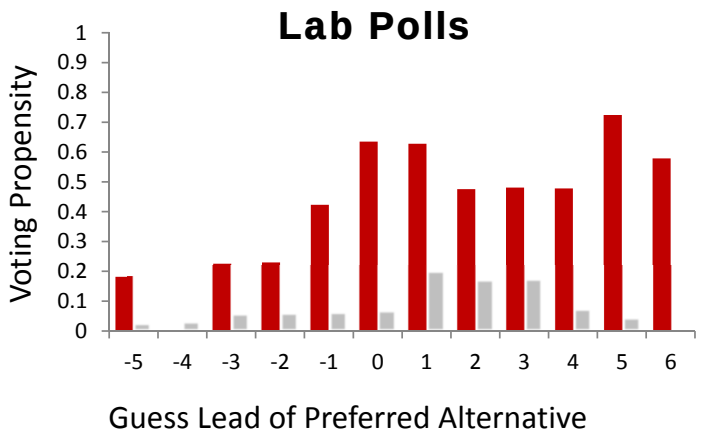
Understanding Voting Behavior

- Use elicited beliefs to understand participation rates
- Perceived close elections generate more participation than others (consistent with pivotal voter model)
  - Perfect Polls - 0.59 and 0.49 (significantly diff at 10%)
  - Lab Polls - 0.62 and 0.43 (significantly diff at 5%)
- Two types of elections that are not close:
  - Preferred alternative winning by a large margin
  - Preferred alternative losingg by a large margin

Response to Beliefs







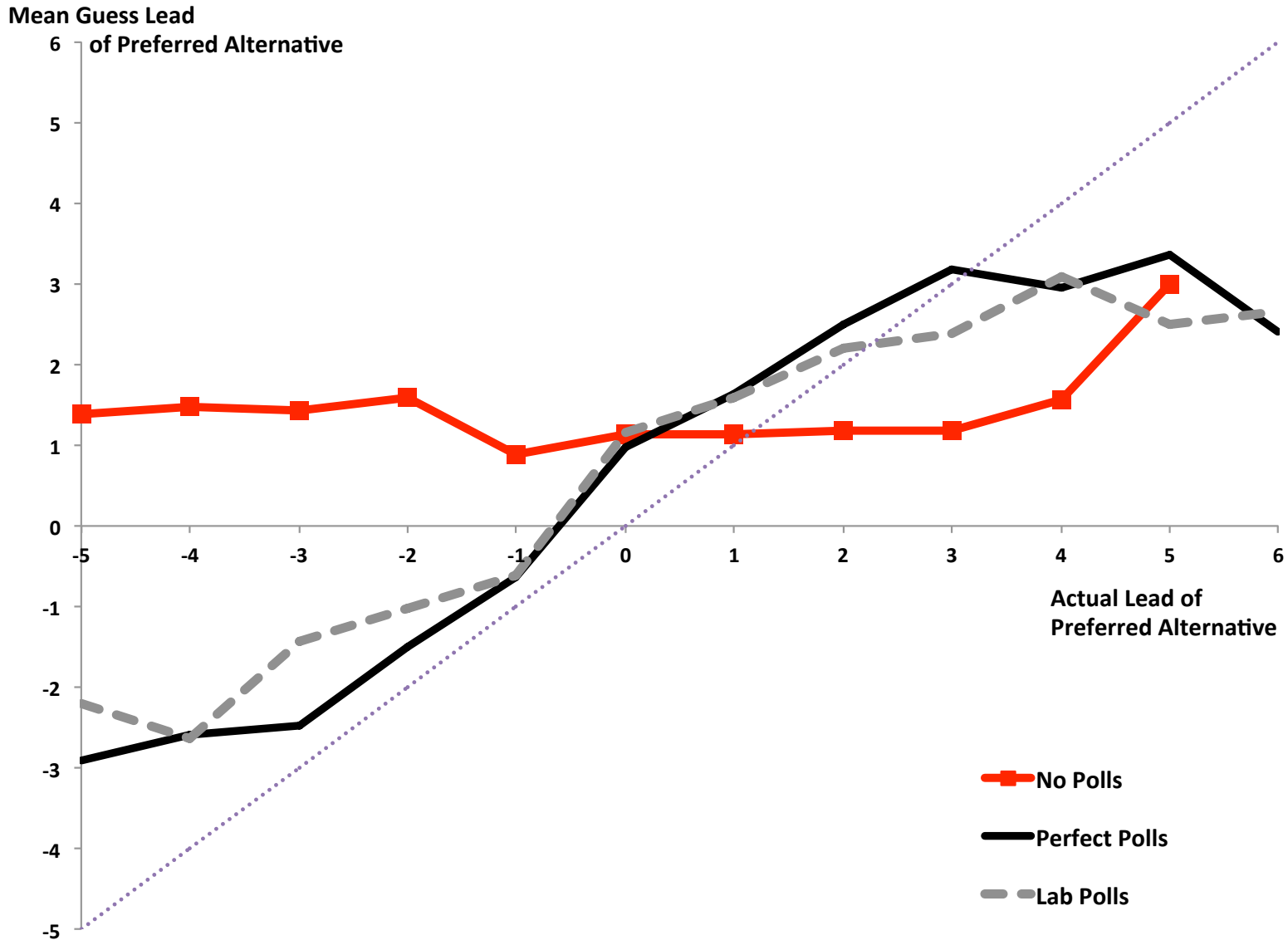
Pivotal Voter Model?

- Increasing curves, inconsistent with the pivotal voter model

	Election Expectation		
	Big Loss	Close Election	Big Win
No Polls	0.29	0.46	0.52
Perfect Polls	0.26	0.59	0.57
Lab Polls (beliefs)	0.22	0.62	0.51
Lab Polls (polls)	0.29	0.60	0.49

- Participation rates significantly lower when big loss expected
- Participation rates not significantly different across close elections and those with an expected landslide victory

Results - Belief Accuracy



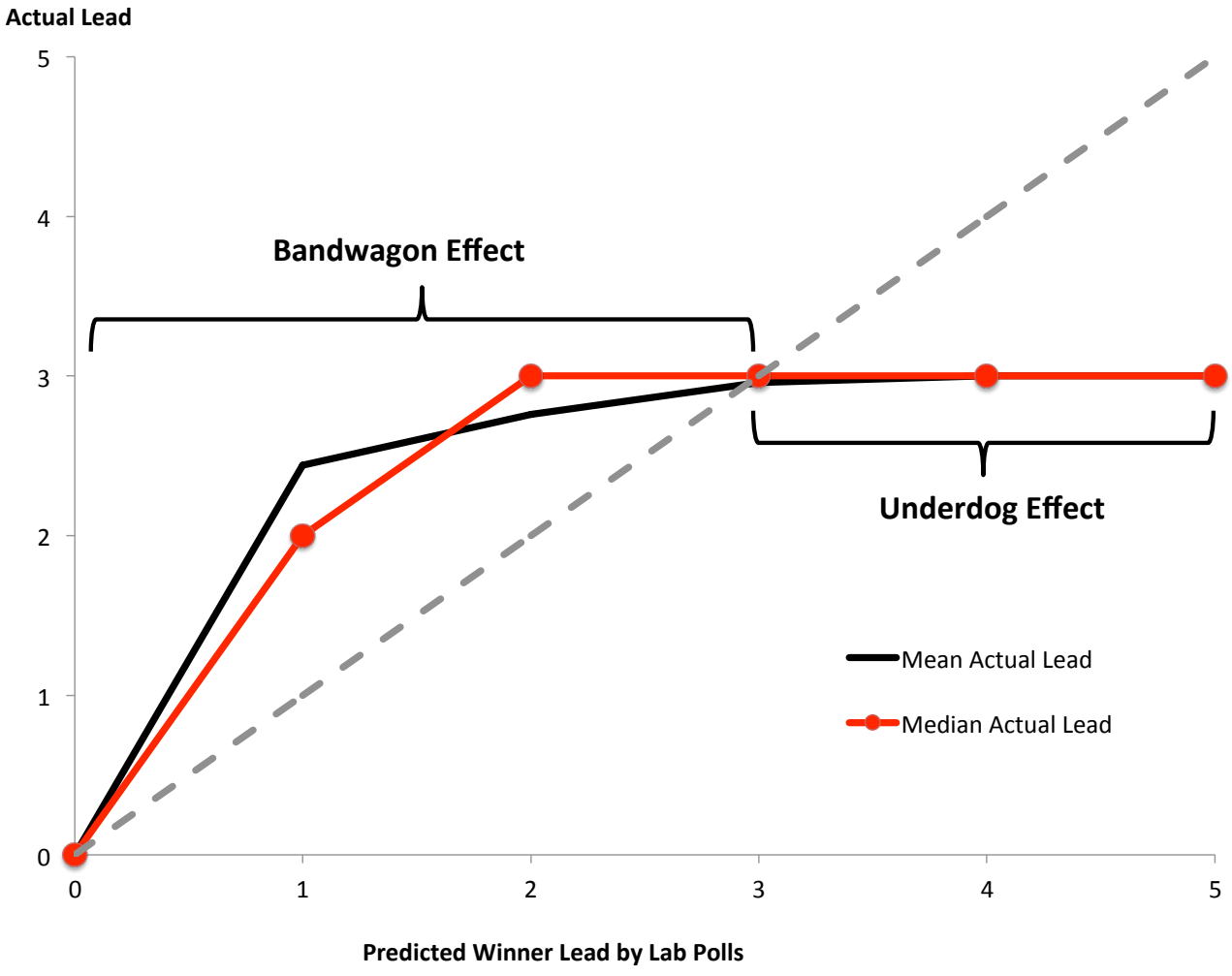
Individual Regression Analysis

- Probit Regression clustering by individuals
- No group-specific effects in any treatment
- No time effects (no learning)
- Individuals are more likely to participate when
  - costs are low
  - for minority voters, when majority lead is smaller
  - for majority voters, when majority lead is larger
  - composition lead of preferred alternative is smaller (in polls treatments)
  - if participated in previous election and won (reinforcement learning)

Poll Reports

- How do subjects behave in polls?
  - truthful? or mis-report their intentions?
- Polls overestimate voter turnout
  - 82% report they will vote (overall turnouts are $<$50%)
  - of those reporting they will vote 42% do vote
  - known result in self-reporting surveys (ANES)
- Subjects rarely vote for an alternative different from the one declared (not much strategic polling)
- Polls reflect the ultimate election outcomes
  - polls predicted correctly 84% of election results (not-tied)

How do Polls Affect Outcomes?



How do Polls Affect Outcomes?

Bandwagon Effect

- predicted winner gains additional support after poll publications
- observed when poll victories are small

Underdog Effect

- predicted loser gains additional support after poll publications
- observed when poll victories are large

Conclusions

- Array of experiments inspecting voters turnout response to beliefs and information transmitted by polls

- **Outcomes**
  - Polls have weak effects on welfare
  - Polls yield more landslide elections
  - Bandwagon effects for small victory margins, underdog effects for large victory margins

- **Behavior - Rational Voter Paradigm?**
  - Propensities to vote increase with vote lead
  - Higher participation when closeness predicted

- **Behavior - Polls**
  - Polls overestimate turnout
  - Polls accurately predict election outcomes