

# Getting the Vote: How do School Bond Issuances and Outcomes Depend on Ballot Disclosures?

CQA

April, 2024

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# Roadmap

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- 1. Research motivation**
2. Summary of findings
3. Data
4. Empirics
5. Conclusion



# Education infrastructure funding

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- School districts issue \$373 billion annually in municipal bonds (\$1.1 trillion O/S) to fund education infrastructure...

... yet 54% of districts need to update or replace **multiple systems like heating, ventilation, and air conditioning (HVAC) or plumbing** (General Accounting Office, 2020)

Most funding from **local** school district municipal bonds

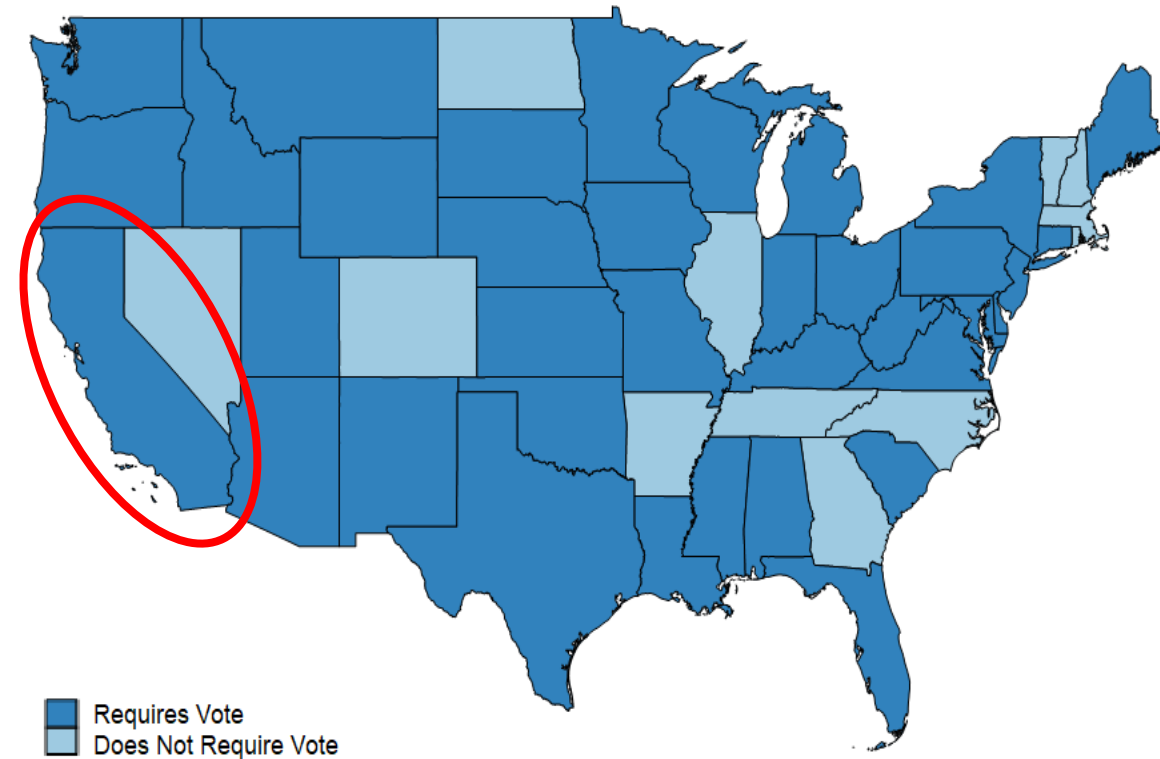
- in CA since 2014, just 5% of funding from the state with *no new state funding in sight*



# Education municipal bonds

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- Bonds issued by individual districts & repayment funded by local property taxes (at the school district level)
- **In all but 11 states, voters must approve bond issuance via public vote.**
- Once approved, the authorized amount can be spent over several bond issues over time.



**\*Note: we focus on California**



# Research questions

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- Is issuing school bonds generally NPV positive?
- If yes, how does voting process relate to project success?
  - Notably, are voters able to discern the highest NPV projects?
- Are voters' abilities to discern the best projects related to the quantity and quality of hard and soft information provided before the election?



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# Research findings (1)

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- Using an RD and a diff-in-diff design:
  - **Passing bonds** leads to higher house prices for up to 7 years
  - Results particularly strong for **less-privileged districts**
  - Results hold net of property tax increases (which at most are about 10 basis points of *assessed* value per year)
  - Placebo test: home prices do not increase in elections with no school bonds on the ballot
- Voter enthusiasm: High voter **approval rates** and **high voter turnout** -> higher house prices
  - Voters can discern which bonds will be highest NPV
  - Results do not vary with district privilege (voters in all districts have similar enthusiasm for highest NPV bonds)



# Research findings (2)

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Do disclosures and other pre-campaign activities inform voter ability to discern and favor highest NPV projects?

- **Demographics**

- Less politically polarized and districts with older voters -> higher turnout
- Voters less likely to have children in school & Republicans -> lower approval

- **Pre-election (“long” ballots) & election date (“short ballot”) disclosures, and other pre-election activity**

- “No new taxes” ↑ approval, especially young voters
- HVAC projects ↑ approval
- Technology projects ↑ young voter approval; but ↓ older voter approval
- Use of needy words & longer ballots ↑ approval





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# Data

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1. Municipal bond issuance data (Issuance documents)
2. Municipal bond election data (Hand collected from Ballotpedia and the State of California)
3. School district characteristics (State of California)
4. Home prices (Zillow)



# Selected summary statistics – elections

<b>Election data (N = 1,088)</b>	<b>Mean</b>	<b>Median</b>	<b>Standard Deviation</b>
Authorized amount in US \$ million	100	47	139
Total votes	21,746	8,698	60,331
Percent of “yes” votes	0.63	0.64	0.09
Number of elections per district	2	2.3	1.1
Number of days between election date and bond issuance	739	393	836

Since 2001, California requires 55% approval for school bonds.



# Selected statistics – across 730 school districts

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	Mean	Median	Standard Deviation
Enrollment	7,392	3,378	9,929
Home price	521,786	410,002	389,923
Property taxes per pupil	3,566	2,620	3,129
Long term debt, per pupil	6,428	4,251	7,595
State funding, per pupil	292	0	886
Free meal or reduced lunch proportion	0.40	0.38	0.23
Unified district	0.43	0	0
High school district	0.11	0	0
Elementary district	0.46	0	0

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# Capital spending, home prices, and bond issuance

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- Using an RDD setup, school bond issuance is associated with higher home prices (over next 7 years)
- Consistent with prior and concurrent research
  - Biasi, B., Lafortune, J. M., & Schönholzer, D. (2024). *What Works and for Whom? Effectiveness and Efficiency of School Capital Investments across the US* (No. w32040). National Bureau of Economic Research.
  - Cellini, Stephanie Riegg, Fernando Ferreira, and Jesse Rothstein. "The value of school facility investments: Evidence from a dynamic regression discontinuity design." *The Quarterly Journal of Economics* 125.1 (2010): 215-261.



# RDD analysis: Home prices

	Log home price, yr t+1	Log home price, yr t+2	Log home price, yr t+3	Log home price, yr t+4	Log home price, yr t+5	Log home price, yr t+6	Log home price, yr t+7
	30% Bandwidth around winning threshold						
Pass bond dummy	<b>0.026**</b>	<b>0.032**</b>	<b>0.037*</b>	0.025	0.038	<b>0.053**</b>	<b>0.059**</b>
	<i>(0.011)</i>	<i>(0.016)</i>	<i>(0.020)</i>	<i>(0.023)</i>	<i>(0.027)</i>	<i>(0.027)</i>	<i>(0.030)</i>
N	975	973	880	877	717	709	599
	20% Bandwidth around winning threshold						
Pass bond dummy	<b>0.030***</b>	<b>0.046***</b>	<b>0.044*</b>	<b>0.042*</b>	<b>0.052*</b>	<b>0.067**</b>	<b>0.067**</b>
	<i>(0.012)</i>	<i>(0.018)</i>	<i>(0.022)</i>	<i>(0.025)</i>	<i>(0.029)</i>	<i>(0.030)</i>	<i>(0.033)</i>
N	906	904	811	808	672	664	560
	10% Bandwidth around winning threshold						
Pass bond dummy	<b>0.036**</b>	<b>0.061***</b>	<b>0.061**</b>	0.051	0.055	0.059	0.059
	<i>(0.016)</i>	<i>(0.022)</i>	<i>(0.030)</i>	<i>(0.034)</i>	<i>(0.038)</i>	<i>(0.039)</i>	<i>(0.043)</i>
N	504	502	446	444	383	377	314
	5% Bandwidth around winning threshold						
Pass bond dummy	0.018	0.041	0.056	0.065	0.064	0.057	0.055
	<i>(0.029)</i>	<i>(0.038)</i>	<i>(0.048)</i>	<i>(0.057)</i>	<i>(0.062)</i>	<i>(0.063)</i>	<i>(0.066)</i>
N	217	217	202	202	177	172	143

# RDD analysis: Home prices in less privileged districts: by prop tax

	Log home price, yr t+1	Log home price, yr t+2	Log home price, yr t+3	Log home price, yr t+4	Log home price, yr t+5	Log home price, yr t+6	Log home price, yr t+7
	<b>5% Bandwidth around winning threshold</b>						
<b>Pass bond dummy</b>	0.007	0.027	0.041	0.043	0.034	0.029	0.006
	(0.032)	(0.041)	(0.051)	(0.061)	(0.065)	(0.066)	(0.043)
<b>Pass bond x low prop tax quintile</b>	<b>0.085*</b>	<b>0.149***</b>	<b>0.217***</b>	<b>0.201**</b>	<b>0.284***</b>	<b>0.271***</b>	<b>0.227***</b>
	(0.045)	(0.058)	(0.070)	(0.084)	(0.092)	(0.095)	(0.060)
<b>Pass bond x high prop tax quintile</b>	-0.014	-0.023	-0.029	0.011	-0.001	0.022	0.034
	(0.037)	(0.048)	(0.058)	(0.069)	(0.077)	(0.079)	(0.049)
<b>Low prop tax quintile</b>	-0.088**	-0.130***	-0.178***	-0.127*	-0.202***	-0.219**	-0.208***
	(0.038)	(0.049)	(0.062)	(0.074)	(0.080)	(0.081)	(0.056)
<b>High prop tax quintile</b>	0.013	0.014	0.026	0.032	0.005	0.103	0.055
	(0.034)	(0.044)	(0.052)	(0.052)	(0.012)	(0.068)	(0.047)
	218	218	203	203	178	173	144



# RDD analysis: Home prices in less privileged districts: by prop tax, economic impact

	Log home price, yr t+1	Log home price, yr t+2	Log home price, yr t+3
	<b>5% Bandwidth around winning threshold</b>		
Pass bond dummy	0.007	0.027	0.041
	(0.032)	(0.041)	(0.051)
Pass bond x low prop tax quintile	<b>0.085*</b>	<b>0.149***</b>	<b>0.217***</b>
	<b>(0.045)</b>	<b>(0.058)</b>	<b>(0.070)</b>
Pass bond x high prop tax quintile	-0.014	-0.023	-0.029
	(0.037)	(0.048)	(0.058)
Low prop tax quintile	-0.088**	-0.130***	-0.178***
	(0.038)	(0.049)	(0.062)
High prop tax quintile	0.013	0.014	0.026
	(0.034)	(0.044)	(0.052)
	218	218	203

## Year 3 interpretation:

Districts in the lowest quintile of property tax have a significant cumulative  $21.7\% + 4.1\% = 25.8\%$  increase in home values (relative to year 0) when bonds succeed relative to when bonds fail.

Median home value for lowest property tax quintile is about \$280,000, for a **\$72,000 increase** over 3 years.

By contrast, districts in highest quintile of property tax have insignificant  $-2.9\% + 4.1\% = 1.2\%$  increase in home values (relative to year 0) when bonds succeed relative to when bonds fail.

Median home value for the highest property tax quintile is about \$873,000, for a \$10,500 increase over 3 years.



# RDD analysis: Home prices in less privileged districts: free or reduced price lunch

	Log home price, yr t+1	Log home price, yr t+2	Log home price, yr t+3	Log home price, yr t+4	Log home price, yr t+5	Log home price, yr t+6	Log home price, yr t+7
	<b>5% Bandwidth around winning threshold</b>						
<b>Pass bond dummy</b>	0.004	0.027	0.033	0.038	0.019	0.009	0.026
	<i>(0.031)</i>	<i>(0.041)</i>	<i>(0.051)</i>	<i>(0.061)</i>	<i>(0.065)</i>	<i>(0.066)</i>	<i>(0.043)</i>
<b>Pass bond x high free lunch quintile</b>	<b>0.155***</b>	<b>0.193***</b>	<b>0.288***</b>	<b>0.223**</b>	<b>0.319***</b>	<b>0.291***</b>	<b>0.253**</b>
	<i>(0.048)</i>	<i>(0.062)</i>	<i>(0.079)</i>	<i>(0.095)</i>	<i>(0.098)</i>	<i>(0.100)</i>	<i>(0.113)</i>
<b>Pass bond low free lunch quintile</b>	0.004	-0.035	-0.027	-0.004	-0.034	-0.030	-0.001
	<i>(0.036)</i>	<i>(0.047)</i>	<i>(0.056)</i>	<i>(0.067)</i>	<i>(0.073)</i>	<i>(0.076)</i>	<i>(0.078)</i>
<b>High free lunch quintile</b>	-0.183**	-0.203***	-0.252***	-0.166**	-0.220***	-0.195**	-0.238***
	<i>(0.041)</i>	<i>(0.053)</i>	<i>(0.068)</i>	<i>(0.082)</i>	<i>(0.084)</i>	<i>(0.084)</i>	<i>(0.073)</i>
<b>Low free lunch quintile</b>	0.049	0.093**	0.108**	0.171***	0.175***	0.184***	0.238***
	<i>(0.034)</i>	<i>(0.044)</i>	<i>(0.051)</i>	<i>(0.061)</i>	<i>(0.065)</i>	<i>(0.067)</i>	<i>(0.047)</i>
	218	218	203	203	178	173	144

# RDD analysis: Home prices in less privileged districts: by percent free or reduced price lunch: economic impact

	Log home price, yr t+1	Log home price, yr t+2	Log home price, yr t+3
	<b>5% Bandwidth around winning threshold</b>		
Pass bond dummy	0.004 (0.031)	0.027 (0.041)	0.033 (0.051)
Pass bond x high free lunch quintile	<b>0.155***</b> (0.048)	<b>0.193***</b> (0.062)	<b>0.288***</b> (0.079)
Pass bond low free lunch quintile	0.004 (0.036)	-0.035 (0.047)	-0.027 (0.056)
High free lunch quintile	-0.183** (0.041)	-0.203*** (0.053)	-0.252*** (0.068)
Low free lunch quintile	0.049 (0.034)	0.093** (0.044)	0.108** (0.051)
	218	218	203

## Year 3 interpretation:

Districts in the highest quintile of free and reduced lunches have a cumulative 3 year 28.8% + 3.3% = **32.1%** increase in home values (relative to year 0) when bonds succeed relative to when bonds fail.

The median home value for the highest quintile of free and reduced lunch districts is about \$285,000, for a **\$91,000 increase**.

By contrast, districts in the highest quintile of property tax have an insignificant cumulative 3 year -2.7% +3.3% = 0.6% increase in home values (relative to year 0) when bonds succeed relative to when bonds fail.

The median home value for the highest quintile of free and reduced lunch districts is about \$853,000, for a \$5,000 increase.

# Placebo test: Are results driven by having a bond on the ballot (relative to years with elections but no school bonds?)

	Log home price, yr t+1	Log home price, yr t+2	Log home price, yr t+3	Log home price, yr t+4	Log home price, yr t+5	Log home price, yr t+6	Log home price, yr t+7
Has elect. dummy	-0.001 (0.003)	-0.001 (0.004)	-0.003 (0.005)	-0.006 (0.006)	-0.009 (0.007)	-0.009 (0.007)	-0.011 (0.008)
Log property tax	0.004** (0.002)	0.011*** (0.003)	0.020*** (0.004)	0.028*** (0.005)	0.033*** (0.006)	0.039*** (0.007)	0.048*** (0.009)
Free lunch prop. of students	-0.010* (0.006)	-0.023** (0.010)	-0.032** (0.014)	-0.041** (0.018)	-0.052** (0.022)	-0.055** (0.026)	-0.118*** (0.035)
Log student enrollment	0.001 (0.001)	0.002 (0.001)	0.002 (0.002)	0.002 (0.003)	0.001 (0.004)	0.001 (0.004)	-0.002 (0.005)
Year, past price, and other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number obs.	11,152	11,136	10,465	9,776	9,102	8,425	7,760

# Voter enthusiasm has additional explanatory power for spending and home prices

- **Percent of yes votes** predicts increased home prices for up to 7 years
  - Controlling for whether or not the bond passed
- **Voter turnout** predicts home prices for up to 7 years
  - Controlling for whether or not the bond passed





# Voter enthusiasm and home prices

	Log home price, yr t+1	Log home price, yr t+2	Log home price, yr t+3
Percent yes votes	0.066** (0.032)	0.092* (0.056)	0.226*** (0.069)
Pass bond dummy	0.008 (0.016)	-0.000 (0.020)	0.002 (0.024)
Turnout percent	0.053** (0.026)	0.071 (0.046)	0.133*** (0.051)
Log reg. voters	0.009*** (0.002)	0.014*** (0.004)	0.023*** (0.006)
Log property tax	0.025 (0.021)	0.034 (0.023)	0.049* (0.025)
Log enrollment	-0.005 (0.004)	-0.012* (0.006)	-0.016** (0.008)
<b>Common control variables</b>			
Current price	Yes	Yes	Yes
School Dist. Ctrls.	Yes	Yes	Yes

## Year 3 interpretation:

As the percent of yes votes goes from 58.1% to 69.9% (interquartile range), home prices increase by a cumulative **2.7%** over three years.

The median home value for the third year after bond approval is about \$467,000, for an increase of **\$12,600**.

As the turnout percent goes from 1% to 7% (interquartile range), home prices increase by a cumulative **1%** over three years.

The median home value for the third year after bond approval is about \$467,000, for an increase of **\$4,700**.

**We also show that these results do not vary with district wealth or the district percentage of free lunches.**



# How do disclosures and other pre-campaign activities inform voter ability to discern and favor highest NPV projects?

Google search results for "how to design a successful bond ballot".

- Texas Association of School Boards**  
https://www.tasb.org › resources › successfully-passing-s...  
**7 Steps to Successfully Passing Your Next School Bond**  
A successful school bond election has a lot of moving parts. These seven steps can increase your district's chances of passing its next bond.  
Missing: ballot | Show results with: ballot
- Nabholz Construction Corporation**  
https://nabholz.com › uploads › 2020/01 › Guid... PDF  
**GUIDE TO A SUCCESSFUL SCHOOL BOND INITIATIVE**  
With the majority of Nabholz' projects being in the arena of education, we've learned to become a partner with school districts long before a bond goes to vote.
- SchoolCEO**  
https://www.schoolceo.com › the-five-stage-bond-camp...  
**The Five Stage Bond Campaign**  
Oct 27, 2020 — Starting the process of a bond proposal may feel a little like standing at the foot of Mount Everest. Looking up toward your towering final ...
- National Low Income Housing Coalition**  
https://nlihc.org › files › 2022-Ballot-Initiative PDF  
**How to Organize a Successful Ballot Measure Campaign ...**  
Jun 15, 2022 — Elections also offer a critical opportunity to take the issue of affordable housing directly to the voters through ballot measures. Over the ...
- PDXScholar**  
https://pdxscholar.library.pdx.edu › viewcontent PDF  
**School District Bond Campaigns - PDXScholar**  
by LL Florence · 2014 · Cited by 3 — Attaining voter support in a school bond election requires a thorough understanding of school and community issues. The literature review focuses on.
- AASA, The School Superintendents Association**  
https://www.aasa.org › resources › resource › strategies-...  
**Strategies Behind a Successful Bond Referendum**

**School boards that initiate bond referenda have a lot at stake!**

**(recall that average number of bond Referenda per district between 2001-2020 is two.)**

**Running a good campaign is arguably important for turnout and for garnering support.**





# Required pre-election disclosures

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- Long ballot text
  - Description of the bond project and expected expenses
  - Impartial analysis of the bond text
  - Tax analysis of the bond proposal
  - Arguments for the bond
  - Arguments against the bond
- **Short ballot text**
  - **75 word limit; some restrictions on language**



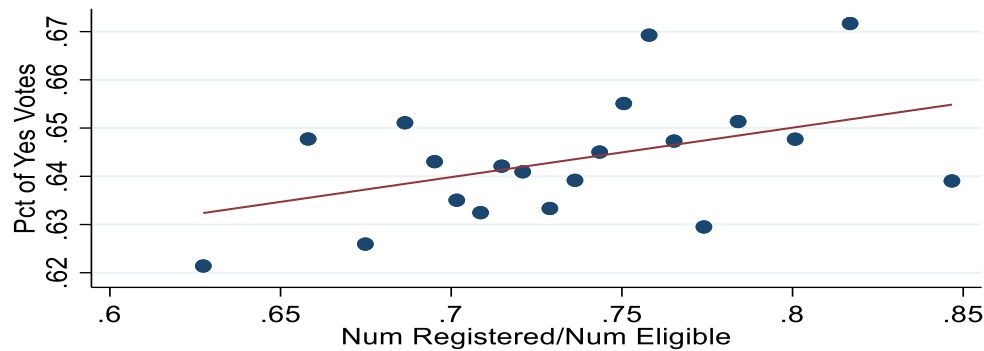
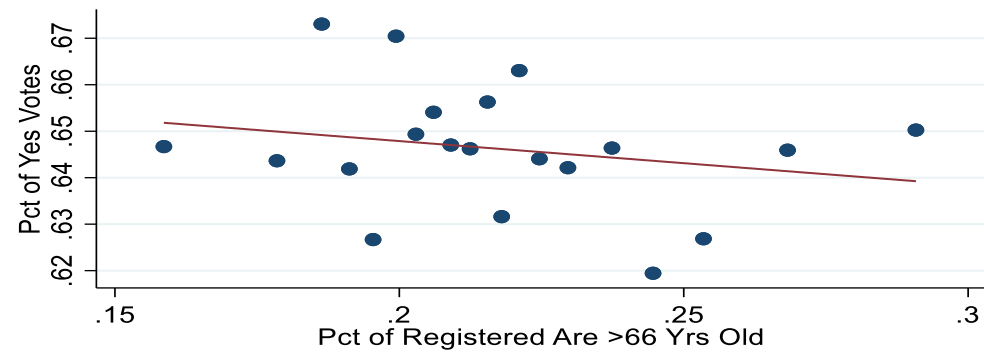
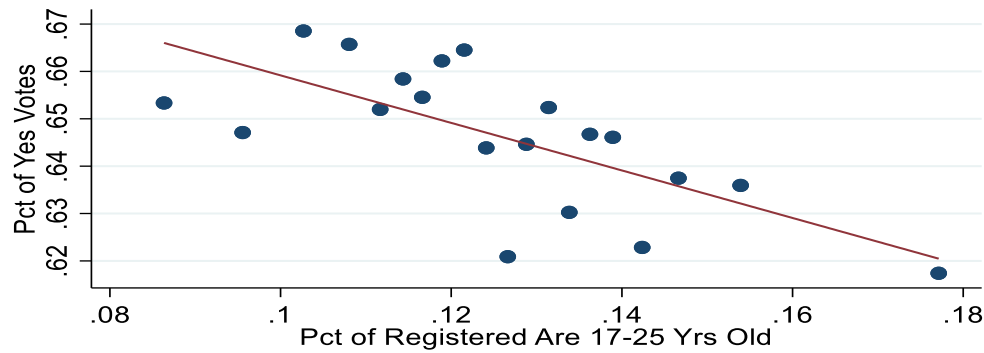
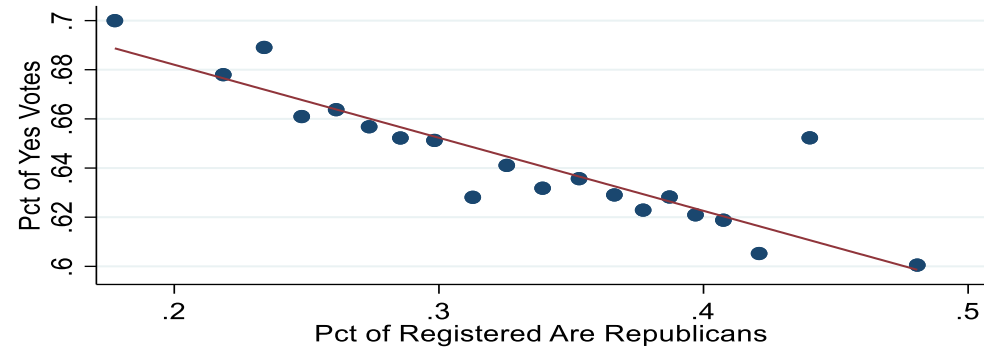
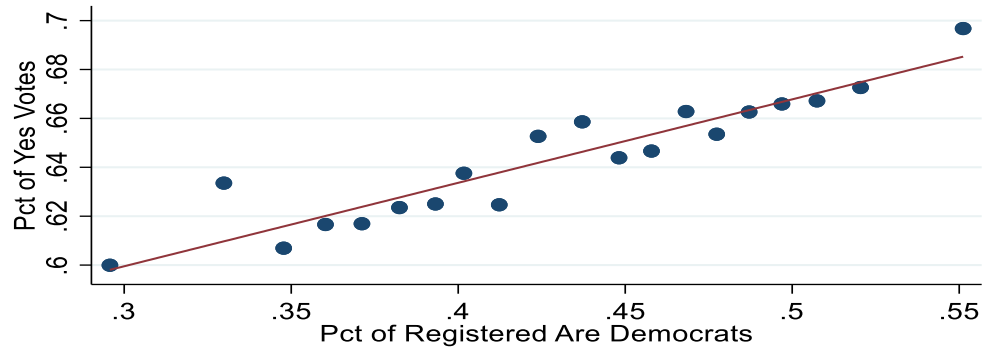
# Optional pre-election activity

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- Political committees
  - Raise money to support or oppose a bond measure
  - Money usually spent for advertising, signs, flyers
- Editorials/articles in local papers
  - Can be by formal committees or independent citizens
- Formal or informal endorsements of bond measures



# First: examine district demographics



# Predicting % of yes votes

	% of yes votes			
% Democrat	0.229**			0.267**
	(0.111)			(0.118)
% Republican	-0.126			-0.060
	(0.092)			(0.104)
Competitive district dummy		-0.017***		0.003
		(0.007)		(0.008)
% youngest voters (<25)			-0.534***	-0.456***
			(0.117)	(0.203)
% oldest voters (>66)			-0.893***	-0.227*
			(0.180)	(0.123)
Log property taxes by student	0.012*			
	(0.007)			
Rural district	-0.026**			
	(0.012)			
Log authorized amount	0.008*			
	(0.005)			
Includes all other controls	Yes	Yes	Yes	Yes

# Next: Does election day ballot disclosure affect approval rates?

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- Election day bond ballots are limited to 75 words

## Ballot question

The ballot question was as follows:<sup>[1]</sup>

**(1) Purpose of bond**

To improve the quality of Ukiah Unified schools **repair or replace leaky roofs; make health and safety**

**improvements; and modernize/construct classrooms** restrooms and school facilities; shall Ukiah

**(2) Borrowing amount**

Unified School District issue **\$75,000,000** of bonds at legal rates, generating on average

\$4,000,000 annually as long as bonds are outstanding at a rate of approximately **5 cents per \$100**

**(3) Cost to taxpayer**

assessed value, with annual audits, independent citizens' oversight committee, NO money for

salaries and no money taken by the State? <sup>[2]</sup>

”






**(4) Length**



“

# Hard information: Promise: “NO NEW TAXES”

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- Full sample: % of yes votes increases by 2.9%.
- Younger voters: as percent of young voters goes from 10.8% to 13.7%, promise  yes votes by **6.7%**
- Older voters: as percent of older voters goes from 18.9% to 22.9%, a promise  yes votes by **2.3%**
- Competitive district: Competitive districts with promise  yes votes by **4.8%**

# Hard information: include \$ estimate of tax costs

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- Full sample: ↓ % of yes votes by **2.9%**.
- This result does not vary with voter demographics

# Hard information: Mention fixing HVAC

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- Full sample: ↑ % of yes votes by **1.3%**.
- Older voters: as percent of older voters goes from 19.2% to 29.2%, HVAC mention ↓ yes votes by **1.0%**
- Competitive district: Including HVAC mention ↑ yes votes by **3.2%** relative to less competitive districts



# Hard information: Mention technology improvement

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- Younger voters: as percent of young voters goes from 10.8% to 13.7%, mention tech ↑ yes votes by **1.9%**
- Older voters: as percent of older voters goes from 18.9% to 22.9%, mention tech ↓ yes votes by **1.4%**
- Competitive district: mentioning tech ↑ yes votes by **2.7%** relative to less competitive districts

# Soft information: Use of needy words

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Controlling for specific funding uses (such as leaky roofs, new construction, safety improvements, technology), does use of needy adjectives like “dilapidated” and “deteriorating” affect voter behavior?

- Full sample: ↑ % of yes votes by **1.4%**.
- Competitive district: Competitive districts that use needy words ↑ yes votes by **2.7%**



# Soft information: Ballot length

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- Full sample: ↑ % of yes votes by **about 1%** (for 1 s.d. change in length)
- Older voters: as percent of older voters goes from 18.9% to 22.9%, a one standard deviation change in ballot length ↑ yes votes by **0.4%**
- Competitive district: Competitive districts with a one standard deviation longer ballot length ↓ yes votes by **1.4%**.

# Roadmap

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# Conclusion

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- Improving school facilities via bond issuance leads to higher home prices.
- Bonds with higher approval rates -> higher home prices
- To get funded, school bond ballot approval depends on several voter demographics, including age and political party.
- Although limited in length, the information disclosed on the ballot significantly impacts voters' approval of school bonds. This effect varies significantly with voter demographics.
- To do: textual analysis of long ballots and analysis of other pre-election campaign activities.

