California Voting and Suburbanization Patterns: Implications for Transit Policy

MTI Report 12-05

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REPORT 12-05

CALIFORNIA VOTING AND SUBURBANIZATION PATTERNS: IMPLICATIONS FOR TRANSIT POLICY

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16. Abstract

Public transit is an environmentally friendly transportation mode that usually focuses on transporting people within and to the city center. However, over the last 60 years, population and employment has been suburbanizing. As the median voter lives further from the city center, and thus enjoys fewer benefits from accessing public transit, does this reduce such a voter's propensity to support public investment in public transit improvements? We analyze voting patterns on 20 transit-related ballot propositions from state-wide elections in California between 1990 and 2010. Controlling for demographic, socio-economic and political ideological factors, we focus on the role of suburbanization as a possible causal factor in determining public support for public transit investment. The results provide a rich picture of the attitudes towards transportation policy among California voters, and will help policy makers to better understand citizen preferences and to better predict how future trends will shift support towards or against transit. Finally, we suggest ways policy makers can use urban land markets to increase support for transit.

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EXECUTIVE SUMMARY

Today, there is great interest among policy makers and the general public in improving public transit in order to revitalize downtowns and reduce the harmful effects of driving on the environment. Investments in public transit are costly, and individuals and elected representatives will only vote in favor of such projects if they perceive the benefits of such investments to exceed the costs. The political economy of popular support for public transit investments hinges on the preferences of the median voter. Intuitively, if at least 50% of the population supports a specific public transit investment, then it will be enacted when voters engage in direct democracy, and it will be more likely to be adopted when elected representatives determine transportation priorities.

In the United States and other countries, the median voter has been suburbanizing; and few suburbanites rely on public transit systems. This study explores whether this suburbanization decreases support for transit infrastructure and other pro-environment policies.

We employ various data sets including individual-level surveys and precinct-level election results covering 20 state-level ballot propositions that took place in California between 1990 and 2010. For decades, California has been a policy trendsetter as shown by its ambitious environmental policy and efforts to encourage increased public transit ridership. We use these data to test hypotheses concerning support for environmental and transit policy and the role of:

- socio-economic variables, including income and unemployment status,
- household demographics, including age, education and race,
- ideology, and
- urban form attributes, including density, centrality and homeownership status.

The analysis of 20 propositions spanning two decades documents important characteristics of elections and the electorate. Policy makers can use our results to predict how voters in certain precincts are likely to vote on various types of transportation-related propositions.

In addition to statistical analysis of all 20 propositions, we also present three case studies that provide context as well as use the data to test additional hypotheses. The first case study is Proposition 1A from 2008, the California High-Speed Rail Bond Initiative. While approved by 52.7% of voters, the high-speed rail project remains controversial. Indeed, a proposition to “End the Bullet Train to Nowhere” was circulated for inclusion on the 2012 ballot, and although it did not qualify, it highlights that changes in public opinion threaten to slow future progress on the high-speed rail and similar projects.[1]

The 2008 election took place in the midst of a serious recession. Our results document that, all else being equal, a precinct in a jurisdiction with higher unemployment was only somewhat more likely to vote for Prop. 1A. Should a future proposition involve either withdrawing or extending high-speed rail funding, our results can help develop informed predictions. Among demographic variables, the likely impact of an aging, increasingly educated population, and other questions, can also be gauged in terms of support using our results.

Suburbanization appears to have reduced support for High-Speed Rail (HSR). HSR offers the greatest benefits to urbanites that can more easily access it. Suburbanites live farther from the new transit infrastructure and thus are less likely to use it. Our results document the magnitude of this phenomenon. We refer to this as a “price” effect of suburbanization.

In addition to having easier access to HSR, theory predicts that urbanites will also tend to see their land values rise from HSR investments. Our results are consistent with this prediction; in Central Valley areas, homeowners near future HSR stations were more likely to vote “yes” on Prop. 1A than homeowners far from future HSR stations. We refer to this as an “investment” effect of suburbanization. Intuitively, suburbanites live farther from public transit nodes and thus their homes are less likely to enjoy a windfall capitalization effect caused by physical proximity and easy access to the new transit infrastructure. Our findings are thus consistent with increasing suburbanization reducing support for transit through both “price” and “investment” effects.

The second case study is Prop. 23 from 2010. This proposition only gathered 38.4% of the vote and would have suspended California’s Global Warming Solutions Act (known as AB 32) if passed. Here again, suburbanization should affect voting on this proposition, as the burden of the regulations that results from AB 32 are borne disproportionately by residents with a large carbon footprint—and previous literature has found that suburbanites have larger footprints. The results are also consistent with this “price” effect; even though the benefits of climate change mitigation are a global public good, suburban voters were more likely to support Prop. 23, all else being equal.

We also find support for the “investment” effect in the 2010 election, as homeownership both increases and decreases the probability of voting to suspend AB 32, depending on how far the precinct is from the center of the metropolitan area. Consistent with our theory, homeownership leads to greater support for climate change mitigation in urban areas, but homeownership leads to less support for these efforts in suburban areas.

We present a third detailed case study mainly for historical comparison; analysis of the Passenger Rail And Clean Air Bond Act (Proposition 181 from 1994) indicates some but not all of our findings regarding the effect of suburbanization on support for transit are robust across multiple issues and time periods.

In sum, the three case studies generate new knowledge about voter preferences for public investment in public transit and environmental regulation. Also, by documenting the correlates of support for all transit-related propositions from 1990 to 2010, this study serves as a valuable reference for policy makers, concerned citizens and others.

Finally, considering the central role of land value in our theoretical model, we end this report with some thoughts on the possibility of using tax increment financing, value capture and other methods to finance public transit infrastructure. Creative financing mechanisms hold the promise of increasing the amount of capital available for transit, and also of ensuring that scarce transit investment funds are used for the highest-value projects.

I. INTRODUCTION

Public transit investment represents a key strategy for revitalizing center cities and reducing the harmful effects of driving on the environment. However, enacting transit projects often requires approval of the median voter – that is, that at least 50% of the electorate plus one, the median voter – vote to approve. However, in the United States and other countries, the median voter has been suburbanizing, and few suburbanites rely on public transit systems. This study explores the association between suburbanization and political support for transit investment.

There are three broad explanations for why suburban voters may tend to oppose public transit investment. First is an access hypothesis. Relative to center city residents, suburbanites face a higher time cost of accessing such public transit and thus will be less likely to use it and thus gain fewer benefits from its presence. Given that public transit tends to improve access to the center city, suburbanites who also work in the suburbs will gain less from such infrastructure, and our results document the magnitude of the phenomenon. We refer to this as a “price” effect of suburbanization. A second explanation for why urbanites are more likely to support transit investment is a capitalization hypothesis. Landowners in center cities will enjoy a windfall in land values when new place-based investments are made close to their homes. A third hypothesis for explaining differential center city versus suburban support for transit projects relates to residential self-selection. If liberals tend to live in center cities and to support public projects, while conservatives tend to live in suburbs and to oppose high taxes and high cost projects, then we will observe a center city/suburban differential even in the absence of the price and investment effects detailed above. In the results we present below, we engage in several econometric strategies to address this possibility.

Over the last two decades, a large number of important transportation-related ballot measures have been voted on in California. A review of all ballot propositions from 1990 to present revealed 20 had a significant transportation component. This study uses various data sets to investigate the transit priorities that Californians revealed in individual-level surveys and in binding voting initiatives. Leveraging both survey and voting data provides the opportunity to test the validity of our estimate. If policy makers are basing decisions on the results from surveys of public opinion, it is important to know how accurately the survey responses predict actual voting.

Specifically, we test hypotheses concerning the role of household demographics, including age, education and race, urban form attributes, including density, centrality and homeownership status, ideology, and socio-economic variables, including income and unemployment status.

The analysis of 20 propositions spanning two decades documents important characteristics of elections and the electorate. Policy makers can use our results to predict how voters in certain precincts are likely to vote on various types of transportation-related propositions.

This report begins by providing background information, including documenting suburbanization trends in the United States and California, reviews related literature, discusses the ballot initiative process in California, and lays out the study's methodological approach.

Chapter II analyzes three case studies; two recent and one historical: the High-Speed Rail proposition (Proposition 1A) from 2008, the Global Warming Solutions Act moratorium proposition (Proposition 23) from 2010, and the Passenger Rail and Clean Air Bond Act (Proposition 181) from 1994, an important example of a transportation funding attempt from an earlier time period.

Suburbanization appears to have reduced support for High-Speed Rail (HSR). HSR offers the greatest benefits to urbanites that can more easily access them. Our results are consistent with this prediction; in Central Valley areas, homeowners near future HSR stations were more likely to vote "yes" on Prop. 1A than homeowners far from future HSR stations. We refer to this as an "investment" effect of suburbanization. Our findings are thus consistent with increasing suburbanization reducing support for transit through both "price" and "investment" effects.

The next case study is Prop. 23 from 2010. This proposition only gathered 38.4% of the vote and would have suspended California's Global Warming Solutions Act (AB 32). Here again, suburbanization should affect voting on this proposition, as the burden of the regulations that results from AB 32 are borne disproportionately by residents with a large carbon footprint—and previous literature has found that suburbanites have larger footprints.[2] The results are consistent with this "price" effect; even though the benefits of climate change mitigation are a global public good, suburban voters were more likely to support Prop. 23, all else being equal.

We also find support for the "investment" effect, as homeownership may increase or decrease the probability of support for transit environmental policies, depending on how far the voting precinct is from downtown. Homeownership leads to greater support for climate change mitigation in urban areas, but homeownership leads to less support for these efforts in suburban areas. These results are perfectly consistent with predictions from urban economic theory regarding how gas taxes and other policies that increase the cost of transportation differentially affect urban versus suburban land markets.

We present a third detailed case study mainly for historical comparison; analysis of the rail transit bond initiative – Proposition 181 from 1994 – indicates that some but not all of our findings are robust across multiple issues and time periods. While we find evidence of the price effects of suburbanization that we describe above, results concerning investment effects were inconsistent with results from the more recent time periods. In California, the early 1990s was an interesting time from a transit funding perspective, and as we discuss in the conclusion, should be studied in more detail in future work.

In sum, the three case studies generate new knowledge about voter preferences for public investment in public transit and environmental regulation. Also, by documenting the correlates of support for all transit-related propositions from 1990 to 2010, this study will serve as a valuable reference for future research.

Finally, considering the central role of land value in our theoretical model, we end this report with some thoughts on the possible role of tax increment financing, value capture and other ways of leveraging land markets to finance public transit infrastructure. Creative financing mechanisms hold the promise of increasing the amount of capital available for transit, and also of ensuring that scarce transit investment funds are used for the highest-value projects.

The remainder of this Introduction contains five subsections that: document suburbanization trends in the United States and California, review related literature, discusses the ballot initiative process in California, lay out the study's central hypotheses, and explain the study's methodological approach. This is followed by the three case studies. Then, we present statistical results for all 20 propositions from 1990-2010. The Conclusion summarizes the findings, highlights limitations of this study, and discusses the possibility of creatively leveraging land markets to generate investment funds for public transit investment.

SUBURBANIZATION TRENDS

In each decade from 1970 to 2010, for the entire United States, we calculate the share of metropolitan area residents who live a fixed interval distance from the central business district (CBD) (e.g., 0-5 miles, 5-10, 10-15, 15-20, etc.). We use tract-level data from the Neighborhood Change database for the 1970-2000 period, and tract-level data from the U.S. Census Gazetteer for 2010.[3]

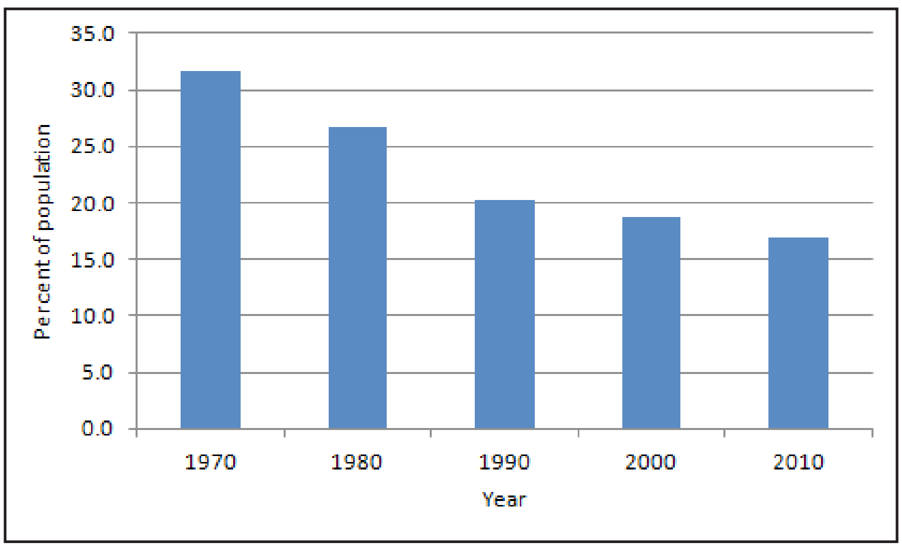

Figure 1. Suburbanization Trends in the U.S., 1970-2010. Percent of U.S. Population Living Less than Five Miles From Downtown

Source: Neighborhood Change Database and 2010 U.S. Census Gazetteer.

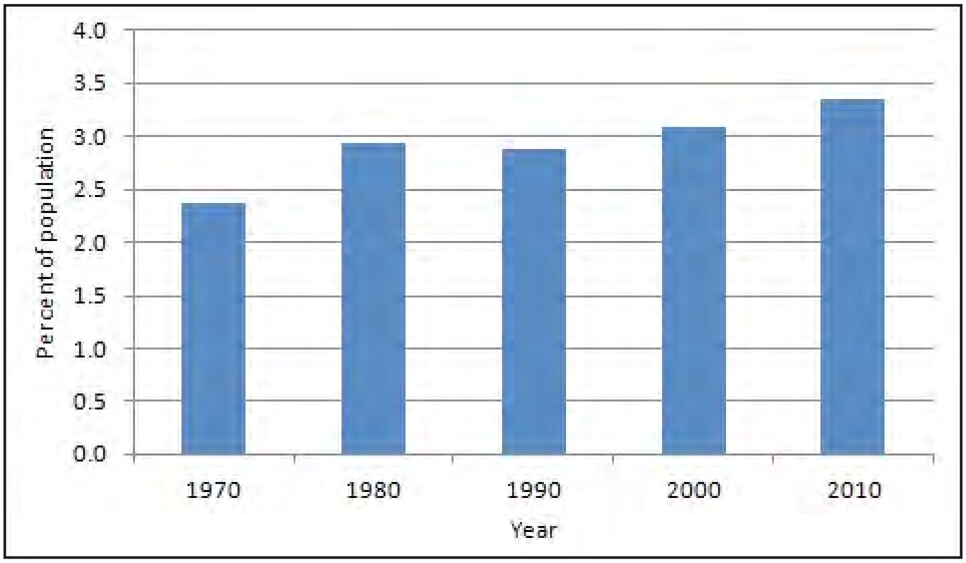

Figure 2. Suburbanization Trends in the U.S., 1970-2010. Percent of U.S. Population Living Between 30-35 Miles From Downtown

Source: Neighborhood Change Database and 2010 U.S. Census Gazetteer.

Figure 1 and Figure 2 show that more and more metro residents are living far from the city center. These two figures highlight what we feel are the most dramatic suburbanization trends in our data. The complete set of calculations from which the figures above were derived is presented in Table 1. In 1970, 31.6% of the metropolitan population lived within five miles of a CBD, while by the year 2010 this percentage had shrunk to 16.9%. In contrast, in 1970, 18% of the metropolitan population lived more than 20 miles from the CBD. By 2010, this percentage had grown to 39%.

Table 1. Percent of U.S. Population Living at Various Distances (Miles) From CBD, 1970-2010

	Miles from CBD							
Year	**0-5**	**5-10**	**10-15**	**15-20**	**20-25**	**25-30**	**30-35**	**>35**
1970	31.6	25.6	15.3	9.5	6.3	4.3	2.4	5.0
1980	26.7	23.9	15.7	10.3	7.2	5.1	2.9	8.3
1990	20.3	19.3	13.7	9.2	6.6	4.7	2.9	23.3
2000	18.7	19.2	14.2	9.8	7.0	5.0	3.1	23.0
2010	16.9	18.8	14.6	10.2	7.3	5.2	3.4	23.5

Source: Neighborhood Change Database and 2010 U.S. Census Gazetteer.

We have also repeated the calculations shown above for California's metropolitan areas. There are no major differences to report. California is more urban than the average U.S. state, which means the bars in Figure 1 are all higher, however both graphs show similar suburbanization trends.

Next, using the California year 2000 party registration data from the Statewide Database at University of California at Berkeley, we present the share of residents in each of the intervals reported in the two figures above who are Democrats and Republicans.

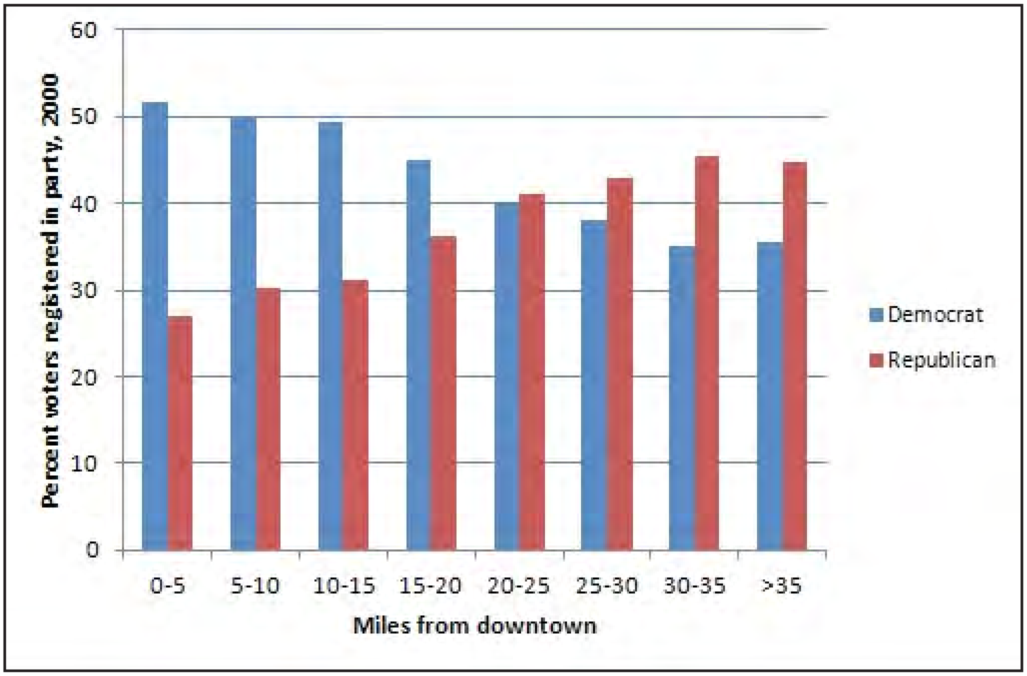

Figure 3. Political Party Membership and Distance From Downtown, California Data

Source: SWDB data and authors calculations.

Figure 3 highlights that the conventional wisdom about where Democrats and Republicans live in cities is correct. More than 50% of residents who live within five miles of a city center are Democrats. This share shrinks monotonically with distance from the city center. In contrast, roughly 25% of residents who live within five of a city center are Republicans and this share rises monotonically with distance from the city center. Note the percentages of Democrats and Republicans do not sum to 100% in the figure as there are a number of independent voters and those who register within one of several minor parties.

LITERATURE REVIEW

Our study relates to the literature that studies ballot initiatives to infer public good demand.[4] Several of these studies employ election data from California to study environmental issues. Matthew Kahn and John Matsusaka based their estimates on county-level election return data, while Kahn's follow-up studies were an improvement in that they utilized election return data at the census tract level. However, none of these studies utilized data from elections occurring after 2000, and few of the propositions considered were transit issues.

Xiaoyu Wu and Bowman Cutter[5] followed up on these studies and also analyzed environmental and a few transit initiatives from California. By employing block-group level data, their analysis employs even more refined geographical data than Kahn. In addition, they included estimate models using spatial econometric techniques, which have desirable statistical properties when data suffer from certain problems such as omitted variables. In one way, our methodology is identical to theirs, as we followed their method of encoding the control variables (discussed below under methodology). We also employ the most geographically refined, block-group-level data. However, our approach differs in that we focus on transit over environmental initiatives.

We also go one step further than all of the above-mentioned studies, by analyzing the most refined geographical unit possible – namely individual-level survey data. For one proposition, Prop. 23 from 2010, we are able to estimate individual-level and precinct-level regressions, using the same sets of variables. Erzo Luttmer[6] also analyzed both voting and survey data, and our approach is complementary to his.

Although tangential, we draw some insight from the cost-benefit analysis literature that has attempted to quantify the bias associated with contingent valuation methods (i.e., stated preference survey methods). Some studies found evidence of a bias; Vossler and co-authors[7] and Schläpfer and co-authors[8] found that survey methods tend to overstate consumer valuations. However, Schläpfer and Hanley,[9] and Robert Johnston[10] did not find evidence of a bias. One study[11] used Field Poll data (which we also employ) and California ballot initiative data in an attempt to verify survey findings, with substantial success. However, all of these cost-benefit studies attempt to measure environmental goods, and we are not aware of studies that have explored transportation goods.

Transportation scholars have analyzed ballot initiatives before. Work on local transportation initiatives includes Werbel and Haas,[12] Haas and co-authors,[13] Hannay and Wachs,[14] and Haas.[15] Our focus differs from these papers in that we focus on state-level ballot initiatives. Also, although some of these studies contain statistical analysis, our approach relies on a much more quantitative methodology.

We conclude this discussion of related literature by mentioning a few other studies we consulted and found helpful in preparation of this report. Gerber and co-authors[16] studied state-level ballot initiatives in California, including one of the same propositions we analyze (Prop. 116 from 1990). They did not explore the determinants of support for initiatives and their focus was rather different from ours.

Recently, several studies of the effect of gas prices on the housing prices have been published, and as discussed below in the Hypotheses subsection, our study relates to these.[17] Whittaker and co-authors[18] analyzed the determinants of holding environmentalist beliefs, using Field Poll data, over several decades. A major focus in their study was on Latino preferences over time. They found that more Latinos, over time, identify as environmentalist. We examine the role of ideology at various points throughout this report, and this relates closely to the literature that is well summarized in their study.

Finally, three studies we read deal with somewhat similar issues to those that concern us here, and also analyze similar data. Wassmer and Lascher[19] analyzed survey data from the Field Poll. The study by Lewis and Baldassare[20] analyzes survey data from the Public Policy Institute of California (PPIC), which is another source of survey data for the present study. Deacon and Schläpfer studied how spatial variation in public good levels affects voting in a local ballot proposition; in this regard their study is quite similar to our general approach.[21]

BALLOT MEASURES AND THE BALLOT INITIATIVE PROCESS

Between 1990 and 2010, California's voters voted on at least 20 ballot propositions related to transit provision. In Table 2, we list these propositions, the month and year of the election, and the percent voting yes. The names of propositions that passed are italicized.

Nine out of 20 propositions passed. This is a higher rate of passage than reported by Gerber and co-authors for all ballot propositions.[22]

Two broad types of propositions can be identified. The first is termed a Transportation Funding Protection proposition; six of this type are in our sample.[23] These generally aim to prevent the legislature from using gas tax and other sources of revenue (e.g., motor vehicle sales tax) for non-transportation expenses. These are popular, as voters approved four of the six.[24]

Table 2. List of Ballot Propositions Studied

Year	Month	Prop.	Name/Description	% Yes Vote
2010	Nov	23	Suspends AB 32 until unemployment is below 5.5% for one year	38.4
2010	Nov	22	Transportation Funding Protection	60.7
2008	Nov	1A	California High Speed Rail Bond. Senate Bill 1856	52.7
2008	Nov	10	Alternative Fuel Vehicles and Renewable Energy	40.5
2008	Feb	91	Transportation Funding Protection	41.6
2006	Nov	1A	Transportation Funding Protection	77.0
2006	Nov	1B	Air Quality, and Port Security Bond Act	61.4
2006	Nov	87	Alternative Energy. Tax on California oil producers	45.4
2002	Nov	51	Transportation Protection of Motor Vehicle Sales Tax	42.2
2002	Mar	42	Transportation Congestion Improvement Act	69.1
1998	Nov	2	Transportation Funding Protection	75.4
1998	Nov	7	Air Quality Improvement	43.6
1994	Nov	181	Passenger Rail and Clean Air Bond Act of 1994	34.9
1994	Nov	185	Public Transportation Trust Funds. Gasoline Sales Tax	19.5
1992	Nov	156	Passenger Rail and Clean Air Bond Act of 1992	48.1
1992	Nov	157	Toll Roads and Highways	28.2
1990	Nov	125	Motor Vehicle Tax. Rail Transit Funding	45.6
1990	Jun	108	Passenger Rail and Clean Air Bond Act of 1990	56.3
1990	Jun	111	Traffic Congestion Relief and Spending Limitation Act of 1990	52.4
1990	Jun	116	Rail Transportation. Bond Act	53.3

The second broad type of proposition relates to funding for transportation infrastructure. Table 2 contains examples of gas tax proposals (on both consumers and producers) and bond measures. Although the conventional wisdom is that voters strongly oppose gas taxes, a review of the record suggests this is not an iron law.[25] For example Prop. 111, from 1990, imposed gas taxes and truck weight fees, and was approved by 52.4%. True, Prop. 125 from 1992 and Prop. 185 from 1994 failed, both of which had similar elements to Prop. 111. And Prop. 87 from 2006 also failed, which would have imposed taxes on oil producers rather than consumers. However, the success rate for gas tax propositions is closer to 25%, rather than 0% that seems to be the conventional wisdom. With regard to the other method of financing transit infrastructure, namely bond acts, again we see some that pass and some that fail, with about half of bond acts passing.

Finally, there are a few propositions that do not fit neatly into either of these two categories. These include Prop. 157 from 1992, Prop. 7 from 1998, Prop. 10 from 2008, and Prop. 23 from 2010. We will delay discussing the diversity of initiatives further until Chapter III of this report. Readers seeking more details about these propositions can turn to the California Secretary of State's Voter Information publications that we reference in Appendix A.

With regard to the institutional details of how propositions appear on ballots, the California Secretary of State's website describes the following five ways a voter in California may come to vote on a proposition:[26]

Legislative Bond Measure

Any bill that calls for the issuance of general obligation bonds must be adopted in each house of the Legislature by a two-thirds vote, signed by the Governor, and approved by a simple majority of the public's vote to be enacted. Whenever a bond measure is on a statewide ballot, an overview of California's bond debt is included in the ballot pamphlet.

Legislative Constitutional Amendment

Whenever the Legislature proposes an amendment to the California Constitution, it is known as a legislative constitutional amendment. It must be adopted in the Senate and the Assembly by a two-thirds vote before it can be placed on the ballot. A legislative constitutional amendment does not require the Governor's signature. This type of amendment requires a simple majority of the public's vote to be enacted.

Legislative Initiative Amendment

Whenever the Legislature proposes to amend a law that was previously enacted through the initiative process, the Legislature is required to present the amendment to the voters for passage. The Legislature may amend the previously-adopted initiative measure if the measure permits legislative amendment or repeal without voter approval. This type of amendment requires a simple majority of the public's vote to be enacted.

Initiatives

Often referred to as "direct democracy," the initiative process is the power of the people to place measures on the ballot. These measures can either create or change statutes (including general obligation bonds) and amend the California Constitution. If the initiative proposes to amend California statute, signatures of registered voters gathered must equal in number to 5% of the votes cast for all candidates for Governor in the previous gubernatorial election. If the initiative proposes to amend the California Constitution, signatures of registered voters gathered must equal in number to 8% of the votes cast for all candidates for Governor in the previous gubernatorial election. An initiative requires a simple majority of the public's vote to be enacted.

Referendum

Referendum is the power of the people to approve or reject statutes adopted by the Legislature. However, referenda cannot be used to approve or reject urgency measures or statutes that call for elections or provide for tax levies or appropriations for current expenses of the state. Voters wishing to block implementation of a legislatively-adopted statute must gather signatures of registered voters equal in number to 5% of the votes cast for all candidates for Governor in the previous gubernatorial election within 90 days of enactment of the bill. Once on the ballot, the law is defeated if voters cast more NO votes than YES votes on the referendum question.

As mentioned above, for each of the propositions we list in Table 2, we also reproduce detailed information from the relevant election's Voter Information Pamphlet (see Appendix C). Further information on propositions can be found on the Web. In addition to these, though covering only 2000 to the current period, we also found the Institute of Governmental Studies at the University of California, Berkeley to be a useful resource to describe ballot measures.[27]

HYPOTHESES

This report's empirical work sheds light on many aspects of voter support for transit. However, we are most interested in testing the following three hypotheses. We first list these hypotheses and then discuss some key points.

- Hypothesis 1: Suburbanization, as measured by distance to the CBD, is associated with less voter support for transit infrastructure and green transportation policy.

- Hypothesis 2: Urban homeownership is positively associated with voter support for transit infrastructure and green transportation policy.

- Hypothesis 3: Suburban homeownership is negatively associated with voter support for transit infrastructure and green transportation policy.

One can think of Hypothesis 1 as a "price" hypothesis, and Hypotheses 2 and 3 as "investment" hypotheses. The logic behind Hypothesis 1, the price hypothesis, is straightforward. Transit infrastructure offers the greatest benefits to urbanites that can more easily access them. Suburbanites live farther from the new transit infrastructure and thus are less likely to use them. Suburbanites who also work in the suburbs are highly unlikely to commute using public transit, as public transit (and HSR) is usually a transportation technology that is focused on taking people to downtown locations. The basis for Hypothesis 1 is that suburbanites face a higher time price for accessing public transit and many of these suburbanites may also not value a transport technology that takes them downtown because they shop and work in the suburbs.[28]

Other policies have benefits that do not vary spatially but that have costs that do vary spatially. Hypothesis 1 applies in these cases as well. Consider Proposition 23 that was defeated in 2010. Climate change mitigation is a global public good, and the benefits of this policy do not obviously vary systematically across cities and suburbs. However, the costs of the policy do. Households that produce more carbon emissions, either directly or indirectly, will face a higher cost of living in general as policies related to AB 32, such as carbon pricing, go into effect.[29] In previous work, we document that households living farther from the city center and live at lower population density, drive more and consume more gasoline. Such households are aware that carbon pricing would raise the cost of gasoline.

On a related note, although this report studies direct democracy, the same incentives we describe here also affect representative democracy. The political representatives of suburban districts tend to oppose carbon mitigation regulation. Work by Cragg and co-authors[30] document that controlling for a Congressional District's per-capita income and the political ideology of the Representative; high per-capita carbon dioxide emissions districts feature Congressmen who vote against carbon mitigation legislation (such as the 2009 Waxman-Markey American Clean Energy and Security (ACES) Act). Thus, spatial variation, either in project benefits or policy costs, is key to the causal mechanisms behind the "price" hypothesis, which we test using data from California ballot propositions.

Hypothesis 2, the first of the two "investment" hypotheses, relates to William Fischel's landmark 2001 study *The Homevoter Hypothesis*,[31] which describes the powerful incentives faced by homeowners to vote, and more generally behave, in ways consistent with maximizing the value of their homes. For basically the same reasons outlined above for Hypothesis 1 (spatial variation in project benefits or policy costs), property values will generally rise in urban neighborhoods as a result of the policies we study.[32] For policies like AB 32 that increase the cost of driving, the standard "monocentric city" model from urban economics shows that higher transportation costs will increase the value of land near the center.[33]

This urban economics model also predicts that higher transportation costs will decrease land values farther from the edge of the city, as households become more willing to trade off higher rents for shorter commutes. Thus the same set of forces that are behind Hypothesis 2 are also behind Hypothesis 3. Again, assuming homeowners behave (and vote) in ways consistent with maximizing the value of their homes, we predict that homeownership will cause suburban voters to be less likely to support carbon pricing. For transit infrastructure projects like HSR, it is possible that policy benefits could be so large that all property values will rise, even in the suburbs. However, we predict that suburban homeowners will perceive that general fund expenditures will need to be curtailed for projects that would increase their housing value by more than HSR, or, that their taxes will need to rise to pay for the project, and either of these would lead to a fall in their property value. In turn, this will cause them to be less likely to support HSR.

If these hypotheses are true, then given suburbanization patterns in the United States, it will become increasingly more difficult – even in liberal states such as California – to gain voter support for public transit infrastructure and low carbon policies.

DATA AND METHODOLOGY

We next describe the methodology that we employ. We explore the demographic, economic, ideological and urban form correlates of voting for transit-related propositions. The propositions we analyze are listed in Table 2 above.

We obtained our data from a variety of sources. The Statewide Database (SWDB) at UC Berkeley distributes statement of vote files matched to census blocks for elections between 1992 and present. Over this time period, we were able to find data for all propositions but one (Prop. 42). However, we were able to obtain survey data covering Prop. 42, from the Field Poll (produced by the Field Corporation). Thus, we have data on all 16 transit-focused propositions from 1992 to present.

Regarding the four propositions from 1990, unfortunately SWDB data do not go back this far. However, we do have survey data for three of these propositions, again collected by the Field Poll. Thus we are able to present estimate models for all but one of the 20 transit initiatives that took place between 1990 and 2000, by using voting data for 15, and by using survey data for four. For one proposition, Prop. 23 from 2010, we analyze both survey and voting data. This survey data was collected by the Public Policy Institute of California (PPIC).

For our analysis of voting data, we merge additional variables to the data supplied by SWDB, namely the 1990 Census block group summary file, the 2000 Census block group summary file, and the 2006-2010 American Community Survey (ACS) five-year estimates (which replaced the decennial census as the primary source for important variables, including income and education), again at the block-group level. We match 1992 and 1994 voting data to the 1990 Census, 1998 and 2002 voting data to the 2000 Census, and 2006, 2008 and 2010 voting data to the ACS.

Our survey data, on the other hand, already includes a rich set of demographic and other variables. The only additional data we merge with the survey data is the population density (population per square mile) of the respondent’s zip code and distance to downtown.

An important characteristic of our data is its high level of geographical refinement. For most of the survey data, we know the respondent’s zip code, and thus have geo-coordinates for zip code centroids (technically, these are zip code tabulation areas, or ZCTAs, and this data is supplied by the Census Gazetteer). Regarding voting data, we know all block group centroids. As we will show, having geographically refined measures is an important part of our analysis.

We study the political divide on transit and related areas like carbon policy using evidence from precinct voting and public opinion polls. Possible factors explaining this division include: socio-economic (income, unemployment), demographic (age, ethnicity, education), political ideology (Republican, Democrat) and residential locational choice.

To study the contrast between center city voters and suburban voters over public transit voting and carbon pricing, we estimate several versions of equation (1) below:

$$\text{Percent Yes}_{ij} = \beta_{0j} + x_i\beta_{1j} + \beta_{2j}y_i + z_i\beta_{3j} + \varepsilon_{ij} \qquad (1)$$

where Percent Yes_{ij} refers to the percent of precinct i voting yes on a proposition j. β_{0j} is the intercept, or constant, term. Three types of explanatory variables are identified as variable types x, y and z: x_i is a matrix and represents *socioeconomic and demographic variables* in precinct i and β_{1j} is the coefficient vector on these terms; is a scalar and represents an *ideological variable* in precinct i and β_{3j} is the coefficient on this variable; and z_i is a matrix of *urban form variables* in precinct i and β_3 is the coefficient vector on these terms. Finally, ε_{ij} is an error term with the usual properties. We will estimate equation (1) using ordinary least squares (OLS), controlling for county fixed effects, while weighting the observations by the total number of votes in precinct i to mitigate heteroskedasticity concerns.[34] We estimate equation (1) for each of the 15 propositions for which we have voting data. As mentioned above, we were unable to find voting data for 1990 propositions, and any data for Prop. 125 from 1990.[35]

For the three propositions we use in our case studies (Prop. 1A from 2008, Prop. 23 from 2010 and Prop. 181 from 1994), our approach is to estimate both restricted and unrestricted versions of equation (1). In particular, we present our estimates for each data set by first restricting β_2 and β_3 to be zero in order to explore the effect of socioeconomic and demographic variables in isolation. We then restrict β_1 and β_3 to be zero to look at the effect of ideology in isolation. Next, we restrict β_1 and β_2 to be zero to look at the effect of urban form in isolation. Finally, we estimate a model where only β_2 is restricted to be zero (to explore the effect of urban form controlling for demographics), and then a model where no coefficient vectors are restricted. Thus, for three of the propositions, we estimate five versions of equation (1), which differ only in terms of restrictions. This approach enables us to develop a deeper understanding of the relative explanatory power of the variables.

Finally, we present side-by-side estimates of the unrestricted version of (1) for all 15 propositions from 1990-2010 for which we have voting data. Comparing coefficient estimates across propositions allows us to check whether unmeasured proposition-specific variables or other characteristics of the propositions, including financing mechanisms (e.g., bond measure, tax increase, etc.), election type (primary versus general), etc., are driving any results.

In the cases where we analyze survey data, the model we estimate is very similar to that shown in equation (1), but the variables are instead the individual-level counterparts. For example, rather than fraction of the precinct with a college degree, we use an indicator of whether or not the respondent has a college degree. Also, rather than representing the percent of votes in a precinct, the dependent variable is dichotomous, representing either preference for or against a proposition. We estimate these models using survey data and OLS regression. We have verified the robustness of these linear probability models using other estimation strategies including probit and logit. The survey data are weighted using the analytical weights provided by the various distributors of the survey data.

To be precise, when using survey data we estimate the following model:

$$\text{Vote Yes}_{ij} = \beta_{0j} + x_i\beta_{1j} + \beta_{2j}y_i + z_i\beta_{3j} + \varepsilon_{ij} \tag{2}$$

Where Vote Yes_{ij} is a zero or one variable indicating whether or not the respondent i supports proposition j. Comparing equations (1) and (2), one can see that we use the same notation for the right-hand side variables. However, these variables, while measuring the same types of factors, are for the most part not identical to those used with equation (1) for the precinct-level data. For example, rather than use the average income in precinct i, we use the income reported by respondent i, and so on. The only variables that are identical between (1) and (2) are population density of and distance to downtown from respondent i's zip code.

Our basic approach to testing for an ecological inference problem is straightforward; we simply compare the results obtained with both types of data. If the results are similar, then we can be more confident that the aggregate voting data is not leading us to make invalid inferences.

One potential weakness of the approach outlined above is that we do not explicitly model how heterogeneous households choose where to live within a metropolitan area. Further, we recognize that households are not randomly assigned to live in the center city or the suburbs. For instance, some people seeking excitement and variety may choose to live at a central location while households with school-age children may seek out suburban locations. In terms of estimating equation (1) using OLS, we are implicitly assuming that controlling for the explanatory variables embodied in the x, y, and z vectors that the unobserved determinants of choosing a residential location are uncorrelated with the unobserved determinants of voting on the transit measures.

As discussed in the hypothesis section, we seek to test the “treatment effect”: that distance from public transit infrastructure reduces demand for such infrastructure. However, we recognize that there is also a potential “selection effect”: that those who would never use such a transit option choose to live far from it. In short, people who live in the suburbs may vote against transit not because they receive disproportionate net benefits, but because they simply dislike transit, and that is one reason they moved to the suburbs in the first place.

Our main attempt to address this concern is to include a proxy for the neighborhood’s average political ideology, or, with the survey data, a measure of the respondent’s ideology. It is plausible that the political ideology is related to preferences for transit, with liberal areas or respondents being more likely to be pro-transit and conservative areas being more likely to be anti-transit.[36]

II. CALIFORNIA BALLOT INITIATIVES CASE STUDIES

In this chapter, we study three ballot proposition case studies – Prop. 181 from 1994, Prop. 1A from 2008, and Prop. 23 from 2010. We include more background information for these propositions here and later in the report. To study these propositions more deeply, we estimate restricted versions of equation (1), and also explore interactions between variables. Once the reader is familiar with the models we estimate for Propositions 185, 23 and 1A, it will be easier to interpret our results for all propositions that we present in the final section before the conclusion.

We lead with a discussion of the 2008 election, in which California voters approved Prop. 1A, a $9.95 billion high-speed rail (HSR) bond. After examining this proposition in detail, we next turn to study Prop. 23 from 2010, in which voters rejected a proposal to suspend the State's climate change mitigation efforts. The final case study we present is Prop. 181 from 1994. This was the third of three major bond initiatives from the early 1990s that would have provided additional funding for rail transit infrastructure.

Figure 4 displays three maps showing voting results for the three case study propositions, at the county level. We see that in all three elections, San Francisco is the most liberal county. Also, the coastal counties are more liberal than those of the Central Valley. Finally, northern California is more liberal *along the coast*, but the reverse is true for the Central Valley (i.e., northern counties in the Central Valley are more conservative than southern counties in the Central Valley).

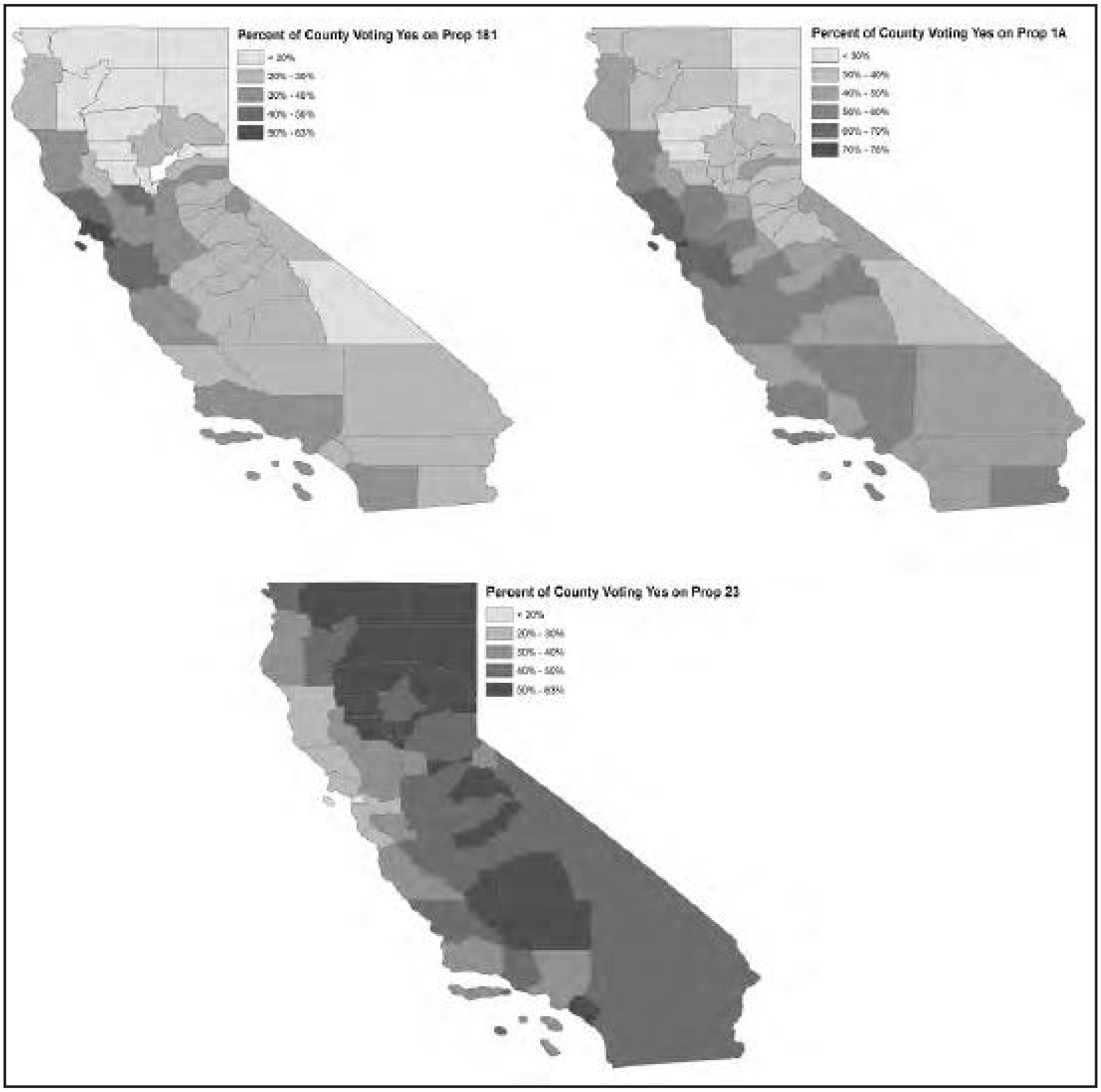

Figure 4. Support for Case Study Propositions, By County

Source: SWDB, University of California, Berkeley.

Clockwise from top left, the maps above show Support for Prop. 181 from 1994, Prop. 1A from 2008, and Prop. 23 from 2010. In the top two maps, darker shades represent pro-transit preferences. In the bottom map, lighter shades represent pro-environmental preferences, as a vote yes on Prop. 23 is a vote to suspend environmental regulation.

PROP. 1A: CALIFORNIA HIGH-SPEED RAIL BOND (2008)

Looking through the language of the propositions we analyze, we find that HSR in California has a long history. Of the propositions in our study pool, we first find mention of HSR in 1994, where Proposition 185, a voter-initiated initiative, contained two provisions for "fast" inter-city rail projects. The first provision of Prop. 185 would have established a San Francisco Bay Area-Los Angeles Rail Corridor Joint Powers Agency. From the 1994 General Election Voter Information pamphlet:[37]

> The counties of Los Angeles, Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Clara, Santa Cruz, and Ventura shall form the San Francisco Bay Area-Los Angeles Rail Corridor Joint Powers Agency for the purposes of acquiring, constructing, and operating a fast train intercity, tourist, commuter, and urban rail corridor between the San Francisco Bay area and Los Angeles…It shall be the goal of the joint powers agency to establish fast train intercity passenger rail service capable of transporting passengers between the San Francisco Bay area and Los Angeles in less than six hours.

Another provision of Prop. 185 also touched on a different high-speed rail route,[38] namely in the San Joaquin Valley:

> It shall be the goal of the state to provide high-speed train service, if sufficient funds become available, between Los Angeles and the San Francisco Bay Area via the San Joaquin Valley by the year 2010. The committee shall determine whether to allocate funds pursuant to this paragraph…the timing of the allocation of the funds shall be at the discretion of the committee.

Although the HSR proposition did not pass in the 1994 election (we discuss this election further in our third case study), the California High-Speed Rail Authority (CaHSRA) existing today was established in 1996 through Senate Bill 1420 (SB 1420). From the Legislative Counsel's Digest:[39]

> Existing law provides for the funding and regulation of rail transportation. An existing Intercity High-Speed Rail Commission was created in 1993 to conduct studies and to prepare a high-speed rail plan for the state.
>
> This bill would create the High-Speed Rail Authority in state government. The bill would prescribe the membership of the authority, and provide for the compensation of members. The bill would require the authority to direct the development and implementation of intercity high-speed rail service that is fully coordinated with other public transportation services.

Since its establishment, the CaHSRA has gone through several business plans; the most recent was published in 2012.[40]

In 2008, voters approved Prop. 1A. The voter information pamphlet for that election describes the purpose of Prop. 1A (entitled the Safe, Reliable High-Speed Passenger Train Bond Act) as:[41]

> To provide Californians a safe, convenient, affordable, and reliable alternative to driving and high gas prices; to provide good-paying jobs and improve California's economy while reducing air pollution, global warming greenhouse gases, and our dependence on foreign oil, shall $9.95 billion in bonds be issued to establish a clean, efficient high-speed train service linking Southern California, the Sacramento/San Joaquin Valley, and the San Francisco Bay Area, with at least 90% of bond funds spent for specific projects, with private and public matching funds required, including, but not limited to,

federal funds, funds from revenue bonds, and local funds, and all bond funds subject to independent audits? Fiscal Impact: State costs of $19.4 billion, assuming 30 years to pay both principal and interest costs of the bonds. Payments would average about $647 million per year. When constructed, unknown operation and maintenance costs, probably over $1 billion annually; at least partially, and potentially fully, offset by passenger fares.

A majority (52.7%) voted yes, meaning that nearly $10 billion in bonds were approved for sale to finance development of the HSR project connecting the main population centers of the state.

Figure 5. California High-Speed Rail (HSR) Map

Source: Modified version of image from http://en.wikipedia.org/wiki/File:Cahsr_map.svg (accessed February 20, 2013).

Figure 5 shows the proposed HSR route. This highlights that this place-based, multi-billion dollar investment will have differential effects across California. Previous research has examined how Europe's high-speed rail has impacted economic activity.[42]

Commonly asked questions about HSR in California include: How long will the journey take?; How many stations will there be?; and Which sections will be built first? Review of the 2008 Voter Information pamphlet provides the following answers: supporters claim top speeds of 220 mph, and travel time "from Los Angeles to San Francisco in about 2½ hours for about $50 per person." This document also explains that, "Phase I of the train project is the corridor between San Francisco Transbay Terminal and Los Angeles Union Station…"[43] Thus, an informed voter would know that although the proposition mentions HSR connections to Sacramento and San Diego, construction would not begin on these sections for some time.[44]

Voting Data

Table 3 below contains descriptions for variables used in this and the next case study. The methodology section of this report (above) describes our approach to estimating equation (1). Recall that the dependent variable is the percent of the block group voting for the proposition, and this voting data comes from the SWDB. Data for the remaining variables, with two exceptions, are from the 2006-2010 ACS five-year estimates, and these data were downloaded from Social Explorer. We provide full details on all data sources in the paragraphs below and in Appendix A: Data.

Table 3. Description of Variables Used in Analysis of Census and Voting Data

Variable Name	Description
PCT08_1A_Y	Percent of block group voting for Prop. 1A (2008)
INC_L_20	Percent of block group with average annual income less than $20,000
INC_20_40	Percent of block group with average annual income between $20,001 and $40,000
INC_40_60	Percent of block group with average annual income between $40,001 and $60,000
INC_75_100	Percent of block group with average annual income between $75,001 and $100,000
INC_100_P	Percent of block group with average annual income greater than $100,001
COLLEGE	Percent of block group with college degree or higher
BLACK	Percent of block group black
ASIAN	Percent of block group asian
OTHER	Percent of block group in "other" race category
HISPANIC	Percent of block group hispanic
YOUNG	Percent of adult population between 18 and 34 years of age
OLD	Percent of adult population above 65 years of age
UNEMPLOY	Percent of block group unemployed
BUSH	Percent of block group voting for George W. Bush in 2004
HOMEOWN	Percent of block group that are homeowners
lnDISTANCE	Natural log of distance to center of MSA, measured in kilometers
lnDENSITY	Natural log of population density of block group, measured as persons per square mile

Notes: MSA: Metropolitan Statistical Area.

Socio-Economic Variables

For this analysis, our socioeconomic variables include income variables and unemployment data. Rather than including a single summary measure of a block group-level income, such as average or median income, we follow Wu and Cutter and include five variables, measuring the percentage of voters in each group. Considering that Prop. 1A funds rail transit, and higher income groups can more easily afford other transportation options, we expect income to be negatively correlated with support for Prop. 1A. We also gathered a measure of unemployment from census data.[45] As supporters of Prop. 1A highlighted, the jobs the project would create, we expect unemployment to be positively correlated with support for Prop. 1A.

Demographic Variables

The demographic variables include measures of educational attainment, race and ethnicity, and age. Holding income constant, we expect education to be positively correlated with support for Prop. 1A. We have less of a solid basis for hypothesizing the relationship between the race and ethnicity variables. Finally, all else equal, older voters may depend on transit more than younger voters. Of course, it is possible that older voters are more fiscally conservative and thus may reject state bond initiatives in general, but keep in mind that equation (1) controls for ideology and other variables.

Ideological Variables

To model ideology, we include a measure of the percentage of the block group voting for the Republican presidential candidate in the previous election (George W. Bush). The 2008 election was a presidential election, but we use the percentage of the block group voting for George W. Bush in the 2004 election as the control for ideology. Note that this ideological variable was predetermined when the 2008 election took place; that is, other than the dependent variable, we do not use any other variable from the 2008 election in the model. We follow this practice whenever possible throughout this report. We feel it is important to use only predetermined independent variables as this enables the results of our models to be useful for predicting election results before elections occur.

Urban Form Variables

The final set of variables includes three measures of urban form: distance, density and homeownership. These are our main variables of interest. We expect the distance a voter lives from downtown, a measure of suburbanization, to be negatively correlated with support for Prop. 1A. Rail transit stations tend to be located near downtowns, and so the "price" of using transit (in terms of access) is lower for downtown residents. Similarly, rail transit access is often easier in denser neighborhoods, and for this reason we expect population density to be positively correlated with support for transit. Finally, we include homeownership, as suburban areas tend to have high rates of homeownership.

Specifically, the variable lnDISTANCE was created by merging geocodes into the ACS block group data, and then using the 2006 definitions of metropolitan areas, we calculate the distance from each block group to the center of the metropolitan statistical area (MSA) in which the block group is located. For block groups that are not in an MSA, we set their distance equal to 50 miles (80 kilometers, as programmed in the model), which is the distance we have arbitrarily chosen as the urban fringe.[46] In all models that use this variable, we calculate this as *ln(1+distance)* (that is, the natural log of one plus the distance in kilometers). Similarly, the lnDENSITY (population density) variable is calculated as *ln(1+density)* (that is, natural log of one plus population density at the block group level), measured as population by land area, measured in square miles.

We show summary statistics for these data in Table 4. Note that most of the variables have a range between zero and one (the exceptions are lnDISTANCE and lnDENSITY). For example, the variable INC_L_20 has a mean of 0.15, and this means that in the average block group, 15% of the population has income of less than $20,000.

Note the mean of PCT_23_Y and PCT08_1A_Y do not necessarily equal the mean of the actual vote, because here the unit of observation is the census block group.

Table 4. Summary Statistics for Census and Voting Variables, 2006-2010

Variable	Observations	Mean	Std. Dev.	Min.	Max.
PCT_23_Y	23,126	0.37	0.12	0	1
PCT08_1A_Y	23,134	0.54	0.12	0	1
INC_L_20	23,082	0.15	0.13	0	1
INC_20_40	23,082	0.19	0.12	0	1
INC_40_60	23,082	0.16	0.09	0	1
INC_75_100	23,082	0.13	0.08	0	1
INC_100_P	23,082	0.27	0.20	0	1
COLLEGE	23,118	0.30	0.21	0	1
BLACK	23,123	0.06	0.12	0	1
ASIAN	23,123	0.12	0.16	0	1
OTHER	23,123	0.19	0.16	0	1
HISPANIC	23,123	0.34	0.28	0	1
YOUNG	23,123	0.32	0.14	0	1
OLD	23,123	0.16	0.11	0	1
UNEMPLOY	23,093	0.09	0.07	0	1
BUSH	23,110	0.41	0.19	0	1
HOMEOWN	23,082	0.59	0.28	0	1
lnDISTANCE	23,211	3.00	0.88	0.02	4.39
lnDENSITY	23,189	8.38	1.70	0.00	12.33

Table 5 contains the results of estimating a restricted version of equation (1). Here, the coefficients on the urban form and ideology variables are restricted to be zero, so that we can focus on the effect of socio-economic and demographic variables. Note that in this model, as in all of the models we analyze in this report that utilize voting data, we include county fixed effects and the variables are weighted by the total number of votes in the census block group.

Table 5. OLS Regression; Prop. 1A (2008) Voting Data, Socio-Economic and Demographic-Only Restriction

Variable	Estimated Coefficients by OLS on Dependent Variable "Percent Voting Yes on Prop. 1A" PCT08_1A_Y
INC_L_20	0.136***
	(0.0075)
INC_20_40	0.0638***
	(0.0079)
INC_40_60	0.0352***
	(0.0084)
INC_75_100	-0.0499***
	(0.0086)
INC_100_P	-0.136***
	(0.0070)
COLLEGE	0.247***
	(0.0036)
BLACK	0.203***
	(0.0043)
ASIAN	0.0748***
	(0.0031)
OTHER	0.0210***
	(0.0048)
HISPANIC	0.143***
	(0.0034)
YOUNG	0.109***
	(0.0046)
OLD	-0.0373***
	(0.0052)
UNEMPLOY	0.00198
	(0.0078)
Constant	0.448***
	(0.0070)
Observations	23,056
R-squared	0.719
County fixed effects?	Yes

Notes: Standard error is listed in parentheses.
p-values are denoted by:
*** p<0.01
** p<0.05
* p<0.10

What do these results tell us about the role of socio-economic variables on support for HSR? Consider first the coefficients on the income variables. The coefficient on the lowest income variable is 0.136, indicating that precincts with a higher share of lower income residents tend to vote in favor of the bill. This is consistent with the hypothesis that lower income residents will support high-speed rail because they are disproportionately familiar with using public transit. The coefficient on the highest income variable is -0.136

(coincidentally the same in absolute value as the above mentioned estimated coefficient to three decimal places). This indicates that precincts with many high income voters voted disproportionately against Prop. 1A. Moving from the coefficient on the lowest income group to the coefficient on the highest income group, the estimate drops in a step-wise fashion from 0.136, to 0.0638, to 0.0352, and so on, indicating that the likelihood of supporting Prop. 1A falls with income. Note that one income category is excluded from this regression, the $60,000 to $75,000 category. This is a technical requirement, as otherwise the sum of the income variables would equal one for each observation, and this will lead to perfect multicollinearity, a violation of the requirements of OLS.

The other major socio-economic variable included in the table above is unemployment. A reasonable hypothesis is that precincts with more unemployed voters voted for high-speed rail, as the project was presented as having stimulus potential. The estimated coefficient on UNEMPLOY, 0.00198, is very small, and is not statistically different from zero. We will have more to say about unemployment later in this section, but this finding indicates that support for high-speed rail does not depend on unemployed voters, as is commonly thought.

Turning to demographic variables, we consider educational attainment, race and ethnicity, and age. Precincts in which many of the voters have college degrees are more likely to vote for Prop. 1A. To illustrate, the findings indicate that a precinct that is one standard deviation above the mean in terms of college graduates is 5% more likely to vote for Prop. 1A. To calculate this percentage, we use (from Table 4) the standard deviation for variable COLLEGE (0.21) and multiply this by (from Table 5) the coefficient on COLLEGE (0.247). The result is 0.0504, or approximately 5%.

With regard to race and ethnicity, we exclude the White/Caucasian category. Note that the coefficient estimates on other ethnic groups is positive. This means that, for example, if a precinct goes from being 25% White and 25% Hispanic (with the remaining some mix of the other ethnicities) to 20% White and 30% Hispanic, the probability of voting for Prop. 1A increases by 0.007 (or just over 0.5%).

Finally, we see that younger voters are more likely to support Prop. 1A, as the coefficient on YOUNG is 0.109, while the coefficient on OLD is -0.373. The category for middle-aged voters is excluded. The estimates on YOUNG and OLD indicate that as the fraction of the precinct's voter age increases toward the OLD category, support for high-speed rail falls.

What do these findings mean for the future of support for HSR? We believe that for many questions, our results are informative. For example, the state of the economy during a future election where some aspect of the HSR project is being decided may not have as large an effect as is commonly believed, as unemployment is not significant. As average income continues to grow in the United States, support for HSR may decrease, although as California adds more residents from other states and immigrants from other countries, many of whom may be low-income, then support for HSR will increase. Thus, the effect of income depends on how the population changes. In addition, as the population becomes more educated, our results suggest that support for HSR will increase, but if we add population that is not college educated, support for HSR will decrease.

Similarly, it is not perfectly clear how these results translate into predictions regarding the role of age. As the population ages, it is possible that these aging voters will turn against HSR. However, these results are also consistent with a world where, as the population ages, the oldest voters are replaced by the middle-aged. The current middle-aged voters are less opposed to HSR than the current old voters, and so as the former replaces the latter, support for HSR may increase.

The preceding paragraphs illustrate how the estimates of our model can be used to inform policy, both by suggesting what various types of voters demand in terms of HSR, and also in predicting how demographic and socio-economic changes will shift support for HSR in future elections.

Next, we look at ideology and urban form. To examine ideology and urban form, we present the results shown in Table 6.

Table 6. Restricted and Unrestricted OLS Regressions; Prop. 1A (2008) Voting Data

	Estimated Coefficients by OLS on Dependent Variable "Percent Voting Yes on Prop. 1A" PCT08_1A_Y				
Variable	**Socio-economic, Demographic Only**	**Ideology Only**	**Urban Form Only**	**All But Ideology**	**Unrestricted**
UNEMPLOY	0.00198			0.0251***	0.0135***
	(0.0078)			(0.0072)	(0.0051)
BUSH		-0.549***			-0.457***
		(0.0023)			(0.0030)
HOMEOWN			-0.135***	-0.0646***	-0.0459***
			(0.0018)	(0.0025)	(0.0018)
lnDISTANCE			-0.0407***	-0.0312***	-0.0077***
			(0.0007)	(0.0006)	(0.0004)
lnDENSITY			0.0099***	0.0068***	0.0026***
			(0.0003)	(0.0003)	(0.0002)
Constant	0.448***	0.756***	0.758***	0.581***	0.709***
	(0.0070)	(0.0015)	(0.0051)	(0.0078)	(0.0057)
Observations	23,050	23,078	23,055	23,050	23,025
R-squared	0.719	0.854	0.708	0.766	0.882
County fixed effects?	Yes	Yes	Yes	Yes	Yes
Demographic/ SE controls?	Yes	No	No	Yes	Yes

Notes: Standard error is listed in parentheses.
p-values are denoted by:
*** p<0.01
** p<0.05
* p<0.10

Table 6 reports five estimates of equation (1). The information in data column 1 contains the same information reported in Table 5 (the model restricted to socio-economic and demographic variables). It is reproduced here so that the coefficient on UNEMPLOY can be compared across other specifications, and also so that the R-squared from the specification in Table 5 can be easily compared with others. Table 6 displays a subset of coefficients on all demographic and socio-economic variables. A complete set of coefficients for the unrestricted model are displayed in Table 23. Those readers interested in the effect of these variables on voting should consult Table 23 as well as Table 5.

Column 2 of Table 6 shows that the variable BUSH is a strong predictor of voting against Prop. 1A. Including county fixed effects but no additional variables, we see that the variable BUSH explains 85% of the variation in voting preference for Prop. 1A (i.e., the R-squared is 0.854). As the R-squared is a number between zero and one, this indicates a very high degree of explanatory power. Indeed, one single variable—BUSH—explains more than do all of the socio-economic and demographic variables combined, as can be seen by comparing the R-squared of 0.854 in column 2 to the value from column 1 of 0.719.[47] Note that the negative coefficient on BUSH of -0.549 indicates that precincts with more Republican voters tended to vote against Prop. 1A, and this is consistent with our expectation that conservative voters are opposed to government transit infrastructure projects.

Column 3 illustrates the effects of urban form. The R-squared of 0.708 indicates that three urban form variables – lnDISTANCE, lnDENSITY and HOMEOWN – together explain nearly as much as do all of the socio-economic and demographic variables. In addition to having considerable explanatory power, the signs and magnitudes of these coefficients tell an interesting story about how urban form influences voting. In general, more suburban locations voted against Prop. 1A. This is consistent with our expectations, as suburban voters have easy access to automobile infrastructure, are higher income, and so can afford high-quality cars, and are also farther from transit locations. We see this with a positive coefficient on population density (denser areas were more likely to vote in favor of Prop. 1A), and negative coefficients on distance and homeownership (precincts far from the city center were more likely to vote against the HSR proposition, as were precincts with many homeowners).

The model shown in column 4 includes the urban form variables as well as the demographic and socio-economic variables. Note of these latter variables, only UNEMPLOY is shown (the others being repressed to conserve on space). In this specification, the R-squared value increases to 0.766, still lower than the ideology-only specification, but a statistically significant increase from the specifications in both columns 1 and 3. Note also that the urban form variables all decrease in magnitude, when comparing the results from column 3 with those from column 4. This is especially true for HOMEOWN, which decreases by more than half. The coefficients on lnDISTANCE and lnDENSITY also decrease, but by less than half.

On the other hand, the coefficient on UNEMPLOY in column 4 increases, compared with the results presented in column 1. The coefficient on UNEMPLOY of 0.0251 indicates that a district that is one standard deviation above the mean has a 0.07 × 0.0251 = 0.0018 higher probability of voting for Prop. 1A, or 0.18%; this is approximately two-tenths of one percent. Thus, although the coefficient on UNEMPLOY is now statistically significant, the effect of unemployment is still not large.

The final specification reported in column 5 of Table 6 is the unrestricted version of the model presented in equation (1), as it includes all of the independent variables. Compared to column 4, this specification controls for ideology. We see that the coefficients on the urban form variables decrease in magnitude even further when compared to the other versions. The coefficient on UNEMPLOY also decreases in magnitude but retains statistical significance (meaning we can reject the hypothesis that the coefficient on UNEMPLOY is precisely zero, though it is still very small in magnitude).

The R-squared value in column 5 is 0.882. This suggests that although the ideology variable explains a lot of the variation in voting for Prop. 1A, the socio-economic, demographic and urban form variables also contribute explanatory power.

In the remainder of this section, we use the same basic approach as above to delve deeper into several questions relating to our distance, homeownership and unemployment variables, and we explore whether voting patterns in California's Central Valley differ systematically from voting patterns in the rest of the state.

A Closer Look at Prop. 1A and the Role of Distance

The variable lnDISTANCE used in the models in Table 6 is calculated as the distance from the center of each block group to center of the downtown of the MSA in which the block group is a part. Urban economic theory suggests the distance a household lives from downtown is important. In many cases, the downtown of the MSA will coincide closely with the location of the HSR station – for example (refer to Figure 5), in each of the cases of San Francisco, San Jose and Los Angeles, the location used as the downtown of the MSA is within one mile of the proposed HSR station. However, in other cases, for example Chico, California, the closest HSR station will be Sacramento. Residents of downtown Chico will have a low value of lnDISTANCE (distance from downtown), but the distance to the nearest HSR station will be long.

Given the nature of Prop. 1A, we are interested in testing whether distance to HSR station predicts voting for Prop. 1A. We calculate a variable we term lnHSRdist, which is the natural log of the distance from a block group to the nearest HSR station.[48]

We re-estimate the unrestricted version of the model using lnHSRdist in place of lnDISTANCE. Somewhat surprisingly, we find that distance to the center of MSA has a larger influence on voting for Prop. 1A than does distance to the nearest HSR station, in the sense that the coefficient estimate is larger in the lnDISTANCE case. The coefficient on lnHSRdist is 0.003, compared to 0.009 for lnDISTANCE. When including both variables in the model, only lnDISTANCE is significant.

A Closer Look at Prop. 1A and Homeownership

Next, we test the hypothesis that land values rise near areas where an HSR station is to be located. We create an interaction variable, INTERACT_HSRdist, where:

$$INTERACT\_HSRdist = lnHSRdist \times HOMEOWN$$

Then, we estimate a new model which his identical to the unrestricted version of equation (1) but that also includes this interaction variable.

Our hypothesis is that homeowners near stations will be more likely to vote for Prop. 1A, as they estimate the value of their home will increase as a result of having easier access to the state's major population centers. On the other hand, homeowners far from stations will vote against Prop. 1A, as their access to HSR will be more limited, although their tax dollars will still be used to repay the bonds used to finance the project.[49]

However, and again to our surprise, we find the coefficient on HOMEOWN is smaller, i.e. more negative (-0.059), and the coefficient on the interaction variable is positive (0.0043). The coefficient on HOMEOWN is not significant, and while the interaction variable is significant at the 1% level, the coefficient is small (at 0.0043). Thus, there appears to be little economic significance of the interaction between HOMEOWN and lnHSRdist when looking across block groups in California.

A Closer Look at Prop. 1A in the Central Valley

The final modification estimates the same interaction model from above, but here we include only households from Central Valley counties. There are several reasons why we think voting patterns in California's Central Valley might differ systematically from voting patterns in the rest of the state.

First, as discussed above, construction was widely known to be planned to occur between San Francisco and Los Angeles in the first phase, so Central Valley voters would have assumed construction would begin relatively soon. Given the higher unemployment in the Central Valley, it would not have been unreasonable for them to assume that construction might even start in these counties, as is now planned.[50] The Central Valley is less urban and more agricultural, and the political landscape is more conservative. However, key to the urban economic theory underlying our analysis is that, by providing fast connections from the Central Valley to the two main population centers of the state, Central Valley real estate, particularly properties near HSR stations, becomes more attractive. Therefore, although our interaction approach, described above, does not reveal a large effect across the state, we think it will in the Central Valley.[51]

Second, we examine whether unemployment was a bigger factor among voters in California's Central Valley in the Prop. 1A vote. Unemployment in the Central Valley is higher than in the rest of the state (12.2% versus 8.8% in our sample) and significant construction would take place first in this region.

Table 7. OLS Regression with Homeowner-Distance Interactions in the Central Valley; Prop. 1A (2008) and Capitalization

Variable	Estimated Coefficients by OLS on Dependent Variable "Percent Voting Yes on Prop. 1A" PCT08_1A_Y
UNEMPLOY	0.0296*
	(0.02)
BUSH	-0.343***
	(0.01)
HOMEOWN	0.0363**
	(0.02)
lnHSRdist	-0.00813**
	(0.00)
lnDENSITY	0.00882***
	(0.00)
INTERACT_HSRdist	-0.0191***
	(0.01)
Constant	0.624***
	(0.02)
Observations	1,645
R-squared	0.77
Demographic/SE and ideological controls?	Yes
County fixed effects?	Yes

Notes: Standard error is listed in parentheses.
p-values are denoted by:
*** p<0.01
** p<0.05
* p<0.10

As one can see in Table 7, the coefficient on UNEMPLOY is about twice the value of that estimated in the unrestricted, state-wide model (0.0135, from Table 6), but not statistically significant, at the 5% level. This does not clearly suggest whether or not unemployment has a differential effect in the Central Valley.

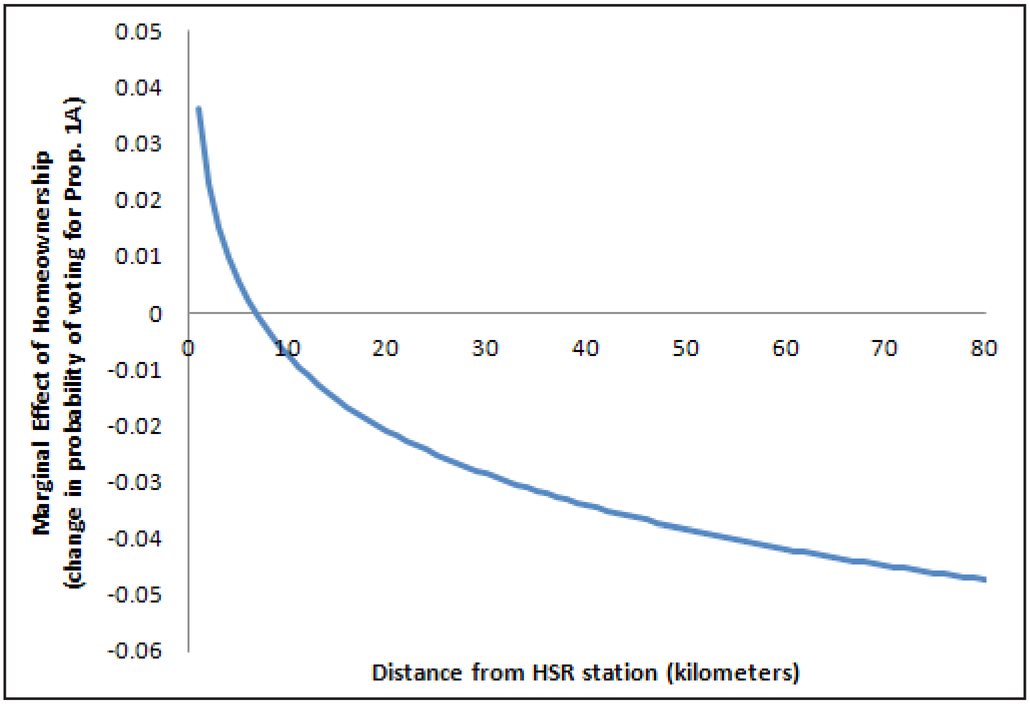

Figure 6. Marginal Effect Of Homeownership on Voting for Prop. 1A, By Distance to HSR Station, Central Valley Counties Only

Notes: Marginal effect is calculated as *0.0363-(0.0191× lnHSRdist)*, units reflect change in predicted probability of voting yes due to change in homeownership rate.

With respect to distance and homeownership both INTERACT_HSRdist and HOMEOWN are statistically significant at the 5% level or better. The coefficient on HOMEOWN is 0.0363, while the coefficient on INTERACT_HSRdist is -0.0191. Note that because we are including the interaction term, the marginal effect of HOMEOWN on voting for Prop. 1A now depends on the value of lnHSRdist. Specifically, dy/dx is 0.0363-(0.0191×lnHSRdist). The resulting curve is shown in Figure 6. These results suggest that homeowners nearer HSR stations are more likely to vote for Prop. 1A, while homeowners farther from HSR stations are more likely to vote against. The cutoff value occurs where lnHSRdist = .0363/.0191 = 1.90, or 4.2 miles; homeowners closer to HSR stations are predicted to support Prop. 1A while homeonwers farther away are predicted to oppose Prop. 1A.

Thus, the result of this final hypothesis test, where we analyze only the Central Valley subsample, is consistent with our expectations.

PROP. 23: SUSPEND AB 32 – THE GLOBAL WARMING SOLUTIONS ACT (2010)

Prop. 23, had it been approved by voters, would have placed a moratorium on the largest aspect of California’s aggressive climate change mitigation efforts. Assembly Bill 32 (AB 32) was signed into law in 2006 by Governor Schwarzenegger, and is a landmark piece of environmental regulation. Thus, to understand Prop. 23, one must begin by understanding AB 32.

The Global Warming Solutions Act of 2006, also known as AB 32, is a California state law that requires greenhouse gas emissions from all sources throughout the state be reduced to year 1990 levels by year 2020. This represents emissions reductions of about 25%.[52] According to economist Michael Hanemann, “AB 32 is noteworthy because it legislates a more comprehensive and stringent control on GHG [Greenhouse Gas] emissions than exists in any other state.”[53] The California Air Resources Board (CARB) is charged with developing regulations and market mechanisms to ensure GHG reduction goals are met by 2020.[54]

Prop. 23 would have suspended AB 32 until the unemployment rate fell to 5.5% for one full year. The specific language voters saw, taken from the 2010 Voter Information Guide was:[55]

> PROP 23: Suspends implementation of air pollution control law (AB 32) requiring major sources of emissions to report and reduce greenhouse gas emissions that cause global warming, until unemployment drops to 5.5 percent or less for full year. Fiscal Impact: Likely modest net increase in overall economic activity in the state from suspension of greenhouse gases regulatory activity, resulting in a potentially significant net increase in state and local revenues.

The passing of AB 32 opened the door to a variety of types of regulations and market mechanisms targeting GHG emissions. The largest policy in CARB’s toolbox is the cap and trade system, which in 2013 went into effect for electric utilities and large industrial facilities, and in 2015, is scheduled to go into effect for distributors of transportation, natural gas and other fuels.

In addition to the cap and trade system, CARB is responsible for overseeing numerous regulations, including a first in the country GHG emissions standards for light duty vehicles, subsequently adopted by other states and the federal government.[56] Other regulations are smaller scale, such as the requirement that automotive service providers check a vehicle’s tire pressure when performing maintenance or repair service. California gas stations are also required to provide free compressed air when customers purchase fuel.[57] Taken together, we envision that voters with a large carbon footprint would be opposed to AB 32 (and would thus be more likely to vote yes on Prop. 23) as they see the burden of these regulations falling disproportionately on them.

Prop. 23 is a transit-related proposition because so many of the policies bundled into AB 32 are intended to change transportation patterns to encourage a more fuel efficient vehicle fleet and to raise the price of fossil fuels to reflect the negative externalities associated with their consumption.[58] Although the word “transit” does not appear anywhere in the text of the proposition, Prop. 23, in the United States, the transportation sector accounts for 70% of oil consumption and 30% of GHG emissions.[59] Another example of how Prop. 23 is a transit proposition is that some of the revenues from the cap and trade system set up by CARB pursuant to AB 32 are likely going to be used to finance the HSR project. Thus, understanding how voters feel about Prop. 23 is crucial for understanding the future of transit in California and the United States.

Survey Data

We begin by discussing the survey data we analyze for Prop. 23. The data were collected by the Public Policy Institute of California (PPIC) in July 2010. Later in this section we analyze voting data for the same proposition; the use of voting data and survey data to estimate equations (1) and (2) sheds light on whether the results obtained with survey or voting are subject to any sort of bias.

This PPIC survey asked about opinions towards global warming in general and AB 32 in particular, although it did not specifically name Proposition 23. One important characteristic of these data for our purposes is the availability of zip code identifiers for respondents, thus allowing us to calculate fairly refined measures of distance to downtown and neighborhood population density.[60]

As mentioned, the survey did not ask about Prop. 23, specifically. However, question topics do relate closely to the issues covered by the proposition, and thus we should be able to predict how a respondent would vote on Prop. 23 based on their answers to the PPIC survey questions. In particular, a "favor" (i.e., in favor of) answer to Q19 below suggests that the respondent would vote "no" on Prop. 23. Even more strongly, a "wait until state economy and job situation improve" answer to Q21 below suggests the respondent would vote "yes" on Prop. 23. This is because even if someone agrees with AB 32 in principle, it is possible they would agree to wait to enforce it.

The survey asked the following five questions that relate to Prop. 23 (response options in parentheses):

- Q18. *How serious of a threat is global warming to the economy and quality of life for California's future—do you think that it is a very serious, somewhat serious, not too serious, or not at all serious of a threat?* (very serious, somewhat serious, not too serious, not at all serious)

- Q19. *Next, to address global warming, do you favor or oppose the state law that requires California to reduce its greenhouse gas emissions back to 1990 levels by the year 2020?* (favor, oppose)

- Q20. *Do you favor or oppose the California state government making its own policies, separate from the federal government, to address the issue of global warming?* (favor, oppose)

- Q21. *When it comes to the state government's plans for reducing greenhouse gas emissions, should it* [ROTATE] [1] *take action right away* [OR SHOULD IT] [2] *wait until the state economy and job situation improve to take action?* (favor, oppose)

- Q22. *Do you think the government should or should not regulate the release of greenhouse gases from sources like power plants, cars, and factories in an effort to reduce global warming?* (should, should not)

Our analysis contains similar explanatory variables to those we use in the analysis of Prop. 1A, except the variables relate to individuals rather than block groups All of these variables are contained in the PPIC survey data, except for two. As mentioned, the PPIC survey provides zip code identifiers for respondents, and we use these to calculate population density at the zip code tabulation area (ZCTA) level. Similarly, we calculate the distance from the center of each respondent's ZCTA to the downtown of the MSA in which that respondent lives. Descriptions of all variables are presented in Table 8.

Table 8. Description of Variables Used in Analysis of PPIC Survey Data

Variable*	Description
NOT_SERIOUS_THREAT	Respondent believes global warming is not a threat
OPPOSE_AB32	Respondent opposes AB 32
OPPOSE_CA_ACTION	Respondent opposes state action on global warming
AGREE_WAIT	Respondent believe state should wait until economy improves before reducing GHG emissions
OPPOSE_REGULATE	Respondent opposes regulating GHG emissions
PROP23INDEX	The sum of the first five variables listed in this table
INC_L_20	Respondent's income is less than $20,000
INC_20_40	Respondent's income is between $20,000-$40,000
INC_40_60	Respondent's income is between $40,000-$60,000
INC_80_100	Respondent's income is between $80,000-$100,000
INC_100_P	Respondent's income is greater than $100,000
COLLEGE	Respondent has college degree or higher
BLACK	Respondent answered "Black" to race and ethnicity question
ASIAN	Respondent answered "Asian" to race and ethnicity question
OTHER	Respondent answered "Other" to race and ethnicity question
HISPANIC	Respondent answered "Hispanic" to race and ethnicity question
YOUNG	Respondent's age is between 18 and 34 years
OLD	Respondent's age is 65 years or older
UNEMPLOY	Respondent is unemployed
REP	Respondent is registered as a Republican
lnDISTANCE	Natural log of distance in kilometers from respondent's household to CBD
lnZIPDEN	Natural log of population density (persons per sq. mi.) in respondent's zip code
HOMEOWNER	Respondent owns home

Note: *All of the variables are indicator (zero or one) variables, except for PROP23INDEX, lnDISTANCE and lnDENSITY.

In short, based on the five questions reproduced above, we have five measures that indicate how each respondent would vote on Prop. 23. To conserve space, we combine these variables into a summary measure which we title PROP23INDEX and use this as the dependent variable in the analyses below.[61] The variable PROP23INDEX is the sum of the first five variables listed in Table 8. We also define a number of socio-economic, demographic, ideological and urban form variables. And, we have data on all the variables that are required to estimate equation (2). We also analyze responses to each of the five questions separately. These results can be found in Appendix B.

Table 9 contains a correlation matrix for the five Prop. 23 questions listed above, as well as the summary PROP23INDEX measure. As one can see, the correlation between the index variable and the individual responses ranges from approximately 0.65 to 0.79. Table 9 also reveals that, although the five Prop. 23 measures are related to each other, they also emphasize different aspects of attitudes towards the policy. The correlation between the five raw questions ranges from 0.56 (between NOT_SERIOUS_THREAT and OPPOSE_AB32) to a low of 0.26 (between OPPOSE_CA_ACTION and AGREE_WAIT).

Table 9. Correlation Between Measures of Support for Climate Change Policy, PPIC Survey Data

	PROP23 INDEX	NOT_SERIOUS_ THREAT	OPPOSE_ AB32	OPPOSE_CA_ ACTION	AGREE_ WAIT	OPPOSE_ REGULATE
PROP23INDEX	1					
NOT_SERIOUS_THREAT	0.78	1				
OPPOSE_AB32	0.79	0.56	1			
OPPOSE_CA_ACTION	0.65	0.34	0.41	1		
AGREE_WAIT	0.72	0.52	0.42	0.26	1	
OPPOSE_REGULATE	0.75	0.54	0.54	0.34	0.41	1

Table 10 contains summary statistics for the complete set of variables. The mean value of PROP23INDEX is 1.65, which means that the average respondent indicated support for Prop. 23 through his responses to nearly two of the core questions listed above. Looking at the individual questions, 44% of respondents agreed that California should wait until the economy improves before reducing GHG emissions, and this was the question in which the most anti-mitigation sentiments were expressed. This figure is also fairly close to the 38.4% of voters that ultimately supported Prop. 23.

Table 10. Summary Statistics, 2010 PPIC Survey Data

Variable	Observations	Mean	Std. Dev.	Min.	Max.
PROP23INDEX	2,183	1.65	1.53	0	5
NOT_SERIOUS_THREAT	2,183	0.3	0.35	0	1
OPPOSE_AB32	2,183	0.28	0.42	0	1
OPPOSE_CA_ACTION	2,183	0.38	0.47	0	1
AGREE_WAIT	2,183	0.44	0.48	0	1
OPPOSE_REGULATE	2,183	0.22	0.40	0	1
INC_L_20	2,063	0.19	0.39	0	1
INC_20_40	2,063	0.20	0.40	0	1
INC_40_60	2,063	0.15	0.36	0	1
INC_80_100	2,063	0.11	0.31	0	1
INC_100_P	2,063	0.24	0.43	0	1
COLLEGE	2,183	0.42	0.49	0	1
BLACK	2,183	0.21	0.41	0	1
ASIAN	2,183	0.12	0.33	0	1
OTHER	2,183	0.17	0.37	0	1
HISPANIC	2,183	0.24	0.43	0	1
YOUNG	2,183	0.33	0.47	0	1
OLD	2,183	0.13	0.34	0	1
UNEMPLOY	2,183	0.07	0.26	0	1
REP	2,183	0.25	0.43	0	1
lnDISTANCE	2,183	2.99	0.88	-1.56	4.60
lnZIPDEN	2,168	7.99	1.48	1.58	10.89
HOMEOWNER	2,055	0.61	0.49	0	1

Source: For all variables except lnDISTANCE and lnZIPDEN: Public Policy Institute of California, Statewide Survey, July 2010, “Californians and the Environment.” The source for lnDISTANCE and lnZIPDEN are author’s calculations, based on U.S. Census figures.

The first set of regression results using the survey data focuses on demographic and socio-economic variables, and these are shown in Table 11. (We emphasize that these models are not linear probability models as the dependent variable ranges from zero to five, and caution must be taken when comparing these results to those from the analysis of the voting data, a comparison we make Table 16.) We begin by describing the estimates of the coefficients on the socio-economic variables. The coefficients on the income variables show that support is highest among the excluded income category (INC_60_80); being in any other income category lowers support for Prop. 23 relative to the excluded category. Although the two highest income categories are less likely to favor Prop. 23 (as measured by the PROP23INDEX variable) than the excluded category, by far, the two lowest income categories most strongly oppose Prop. 23. This is to say, we find a non-linear relationship between support for Prop. 23 and income level, with both low-income and high-income groups opposed, but the low-income groups more strongly opposed. However, only the coefficients on the two lowest income groups are statistically significant.

The coefficient on unemployment is negative but not statistically significant. One would expect a positive and significant coefficient on unemployment, as Prop. 23 had a strong employment aspect to it.

In Appendix B, we present results where we analyze linear probability models that use each of the five individual questions as dependent variables. In these models, we would expect unemployment to be most strongly related to the AGREE_WAIT question. We, indeed, do find this to be the case. However, even in this model, the coefficient estimate on UNEMPLOY is not statistically distinguishable from zero.

Turning to demographics, we again include age, education and race/ethnicity variables. Young voters tend to oppose Prop. 23, while older voters tend to support it. These estimates are highly significant. On the other hand, although more educated voters (those with a college degree) tend to oppose Prop. 23, as shown by the negative coefficient on COLLEGE of -0.0969, this coefficient is not statistically different from zero. Finally, we do not find a strong relationship among the race and ethnicity variables with respect to potential Prop. 23 vote preference. With the exception of the OTHER variable (which is the catchall category for a respondent not fitting into one of the named race or ethnicity categories), none of the coefficients is statistically significant.

Table 11. OLS Regression, Prop. 23, 2010 Survey Data, Socio-Economic and Demographic-Only Restriction

Variable	Estimated Coefficients by OLS on Dependent Variable “Index of Support for Prop. 23” PROP23INDEX
INC_L_20	-0.520***
	(0.1290)
INC_20_40	-0.560***
	(0.1220)
INC_40_60	-0.129
	(0.1260)
INC_80_100	-0.0383
	(0.1370)
INC_100_P	-0.0992
	(0.1190)
COLLEGE	-0.0969
	(0.6570)
BLACK	0.0659
	(0.6630)
ASIAN	-0.517
	(0.6670)
OTHER	-0.290***
	(0.1040)
HISPANIC	0.219
	(0.6630)
YOUNG	-0.340***
	(0.0765)
OLD	0.419***
	(0.1030)
UNEMPLOY	-0.0968
	(0.1300)
Constant	1.708**
	(0.6890)
Observations	2,063
R-squared	0.134
Adjusted R-squared	0.112
County fixed effects?	Yes

Notes: Standard error is listed in parentheses.
p-values are denoted by:
*** p<0.01
** p<0.05
* p<0.10

We next turn to the regression results using the survey data that focus on ideology and urban form. These are presented in Table 12.

Table 12. Restricted and Unrestricted OLS Regression; Prop. 23, 2010 Survey Data

	Estimated Coefficients by OLS on Dependent Variable PROP23INDEX				
Variable	**Socio-economic, Demographic Only**	**Ideology Only**	**Urban Form Only**	**All But Ideology**	**Unrestricted**
UNEMPLOY	-0.0968			-0.0682	0.0116
	(0.1300)			(0.1390)	(0.1290)
REP		1.513***			1.352***
		(0.0687)			(0.0779)
lnDISTANCE			0.0756	0.087	0.0276
			(0.0589)	(0.0593)	(0.0551)
lnZIPDEN			-0.125***	-0.106***	-0.0867**
			(0.0379)	(0.0383)	(0.0355)
HOMEOWNER			0.242***	-0.125	-0.0896
			(0.0712)	(0.0852)	(0.0792)
Constant	1.708**	1.208***	1.981***	2.157***	2.186***
	(0.6890)	(0.1450)	(0.4900)	(0.8270)	(0.7680)
Observations	2,063	2,183	2,040	1,937	1,937
R-squared	0.134	0.236	0.083	0.14	0.259
Adjusted R-squared	0.112	0.222	0.065	0.116	0.238
County fixed effects?	Yes	Yes	Yes	Yes	Yes
Demographic/SE controls?	Yes	No	No	Yes	Yes

Notes: Standard error is listed in parentheses.
p-values are denoted by:
*** p<0.01
** p<0.05
* p<0.10

Table 12 reveals some interesting findings. First, as with the voting data we analyzed with Prop. 1A, a single variable, ideology explains more than all of the socio-economic and demographic variables. We see this by comparing the R-squared value in column 2, which contains only the variable REP (and county fixed effects), with that in column 1, which includes all the demographic and socio-economic variables (and county fixed effects).[62] The positive coefficient on REP means that Republicans are more likely to support Prop. 23. Another way of interpreting the results in column 2 is that a Republican is likely to answer “yes” to 1.513+1.208=2.722 of the five Prop. 23-related questions. This is the sum of the coefficients estimates for REP (1.513) and the CONSTANT (1.208).[63]

In column 3 of Table 12 we see that the urban form variables all have the expected signs. The results suggest that the farther a person lives from downtown (lnDISTANCE), the more likely he or she is to vote for Prop. 23, and that the higher the population density of the neighborhood (represented by lnZIPDEN), the less likely that resident is to vote for Prop. 23. This is consistent with the idea that suburban residents face a higher burden of carbon mitigation regulation. Similarly, the coefficient on HOMEOWN is positive and significant, suggesting that suburban residents (who are more likely to own their home) support Prop. 23. This positive coefficient is also consistent with homeowners believing Prop. 23 will lower the value of that, for most households, which is their single largest asset. We revisit this idea later. Of these three variables, only lnZIPDEN is statistically significant.

In column 4, we include urban form and demographic variables. The biggest change we see when comparing the results in column 4 to those in column 3 is that the coefficient on HOMEOWN changes from positive and significant to negative and insignificant. Controlling for socio-economic and demographic variables eliminates the statistical significance of HOMEOWN. Note also that the marginal contribution to explanatory power of the demographic variables is fairly large as the adjusted R-squared in column 4 of 0.116, is larger than the adjusted R-squared in column 3 of 0.0653.

Finally, column 5 presents the estimates of our unrestricted model. While the estimate of the coefficient on the HOMEOWN variable is shown not to be robust to demographic controls, the lnZIPDEN variable is robust to the inclusion of socio-economic, demographic and ideological variables, and the coefficient estimate of -0.0867, while smaller than in other columns, remains large in magnitude.

VOTING DATA

We continue the analysis of Prop. 23, by turning to the voting data. Our intention is to estimate the same versions of equation (1) as are shown in Table 5 and Table 6 for the analysis of Prop. 1A. In the discussion of the Prop. 23 results, we highlight only the significant differences between the results of the voting data and survey data analyses.

Summary statistics for the voting data are given in Table 4, at the beginning of this chapter. The results of our first analysis of Prop. 23 voting data are reported in Table 13. Here, we see a positive, approximately linear relationship between income and support for Prop. 23. We also see that unemployment is positive and marginally significant.

College-degreed voters opposed Prop. 23, on average, and unlike the individual regressions, the results suggest both young and old voters opposed Prop. 23, on average (with middle-aged voters, the excluded category, being most likely to have supported it). Finally, the race and ethnicity variables suggest that Black and Hispanic voters were opposed to Prop. 23, relative to the excluded (White) category.

Table 13. OLS Regression, Prop. 23, 2010 Voting Data, Socio-Economic and Demographic-Only Restriction

Variable	Estimated Coefficients by OLS on Dependent Variable "Percent Voting Yes on Prop. 23" PCT_23_Y
INC_L_20	-0.0952***
	(0.0081)
INC_20_40	-0.0572***
	(0.0085)
INC_40_60	-0.0400***
	(0.0090)
INC_75_100	0.0430***
	(0.0093)
INC_100_P	0.159***
	(0.0075)
COLLEGE	-0.325***
	(0.0038)
BLACK	-0.205***
	(0.0047)
ASIAN	0.0031
	(0.0034)
OTHER	-0.0180***
	(0.0053)
HISPANIC	-0.130***
	(0.0037)
YOUNG	-0.0605***
	(0.0050)
OLD	-0.0104*
	(0.0054)
UNEMPLOY	0.0158*
	(0.0084)
Constant	0.409***
	(0.0075)
Observations	23,066
R-squared	0.726
County fixed effects?	Yes

Notes: Standard error is listed in parentheses.
p-values are denoted by:
*** p<0.01
** p<0.05
* p<0.10

Next we turn to discuss ideology and urban form, using the voting data. Table 14 contains these results.

Table 14. Restricted and Unrestricted OLS Regressions; Prop. 23, 2010 Voting Data

	Estimated Coefficients by OLS on Dependent Variable "Percent Voting Yes on Prop. 23" PCT_23_Y				
Variable	**Socio-economic, Demographic Only**	**Ideology Only**	**Urban Form Only**	**All But Ideology**	**Unrestricted**
UNEMPLOY	0.0158*			-0.00675	0.00721
	(0.0084)			(0.0076)	(0.0044)
BUSH		0.553***			0.549***
		(0.0022)			(0.0026)
HOMEOWN			0.0809***	0.0240***	0.0012
			(0.0019)	(0.0027)	(0.0016)
lnDISTANCE			0.0472***	0.0377***	0.00954***
			(0.0007)	(0.0006)	(0.0004)
lnDENSITY			-0.0107***	-0.0106***	-0.00566***
			(0.0004)	(0.0003)	(0.0002)
Constant	0.409***	0.108***	0.125***	0.307***	0.153***
	(0.0075)	(0.0014)	(0.0054)	(0.0083)	(0.0049)
Observations	23,066	23,088	23,071	23,066	23,033
R-squared	0.726	0.89	0.716	0.777	0.925
County fixed effects?	Yes	Yes	Yes	Yes	Yes
Demographic/SE controls?	Yes	No	No	Yes	Yes

Notes: Standard error is listed in parentheses.
p-values are denoted by:
*** p<0.01
** p<0.05
* p<0.10

Table 14 shows the results when including ideology, urban form, or all (unrestricted) variables. The specification in column 1 is identical to that in Table 13 and is reproduced to facilitate comparison between the various restrictions we impose on equation (1). Column 2 shows the ideology-only results of the regression of PCT_23_Y on BUSH with fixed county effects; note again the high level of explanatory power when including only this ideology variable and county fixed effects.

Column 3 shows the results of the regression model with only three urban form variables. Here, we see that suburbanites voted against GHG mitigation; that is, in favor of Prop. 23. This is seen especially by the positive coefficients on lnDISTANCE and negative coefficients on lnDENSTY. However, the magnitude of the urban form coefficients decreases in column 4 when demographic controls are added, particularly the coefficient on HOMEOWN. Column 5 shows the results of the unrestricted model. We see that two urban form variables (lnDISTANCE and lnDENSITY) retain their statistical significance even when controlling for ideology and other variables, though the magnitudes decrease considerably.

Nonetheless, the results confirm our expectations from Hypothesis 1, that because suburban residents perceive that the incidence of a GHG regulatory regime falls more heavily on them, they are more likely, on average, to vote against GHG mitigation efforts compared to urban residents.[64]

We close this section with a comparison between the results obtained with survey and voting data for Prop. 23, and also by testing our Hypotheses 2 and 3. We test these hypotheses next, by taking a examining Prop. 23 voting preferences with respect to homeownership.

A Closer Look at Prop. 23 and Homeownership

To test Hypotheses 2 and 3, we estimate an interaction model identical to the model of Prop. 1A, that we discuss in the subsection titled *A Closer Look at Prop. 1A and Homeownership.* The analysis presented here differs from that analysis in two ways. First, the dependent variable is PCT_23_Y, not PCT_1A_Y. Second, we use as the distance measure the distance to downtown rather than the distance to the nearest HSR station. In all other ways the models are identical and we refer the reader to the Prop. 1A discussion, above, for full model details.

The results presented in Table 15 confirm Hypotheses 2 and 3. Interpreting the results requires looking at two coefficient estimates, the estimate on HOMEOWN (−0.0410), and the estimate on the HOMEOWN/lnDISTANCE interaction (0.0141, represented by variable INTERACT). These estimates suggest that if the homeownership rate increases in downtown neighborhoods, support for Prop. 23 will decrease. This is consistent with Hypothesis 2.

Table 15. OLS Regression with Homeowner-Distance Interactions; Prop. 23 (2010) and Capitalization

Variable	Estimated Coefficients by OLS on Dependent Variable "Percent Voting Yes on Prop. 23" PCT_23_Y
HOMEOWN	-0.0410***
	(0.00)
lnDISTANCE	0.00159**
	(0.00)
lnDENSITY	-0.00548***
	(0.00)
INTERACT	0.0141***
	(0.00)
Constant	0.176***
	(0.01)
Observations	23,033
R-squared	0.925
Demographic/SE and Ideology controls?	Yes
County fixed effects?	Yes

Notes: Standard error is listed in parentheses.
p-values are denoted by:
*** p<0.01
** p<0.05
* p<0.10

To illustrate, consider the effect of a 10% increase in the homeownership rate downtown. The interaction model above predicts that the probability of this downtown precinct supporting Prop. 23 will decrease by:

$$-0.041 \times 0.1 = -0.0041, \text{ or } -0.41\%$$

that is, a *decrease* of 0.41% (less than a half-percentage point). In a neighborhood at the urban fringe (where lnDISTANCE takes on its maximum value of 4.4),[65] the effect of a 10% increase in homeownership is:

$$(-0.041 \times 0.1) + (0.0141 \times 4.4 \times 0.1) = 0.0021, \text{ or } 0.21\%$$

that is, slightly more than a two-tenths of one percent *increase* in support for Prop. 23). These results are consistent with our Hypothesis 3, which in turn (like Hypothesis 2) is derived from the predictions of the monocentric city model from urban economics, which predicts that when the cost of transportation increase (e.g., as gas stations charge more for gas due to the cost of complying with the mandatory compressed air filling regulations, or more importantly, when the cap and trade requirements for oil refineries producing vehicle fuels causes the wholesale price of gasoline to rise), land values will rise in the city center and fall at the urban fringe.[66] Our findings suggest the urban economics model helps explain voting decisions.

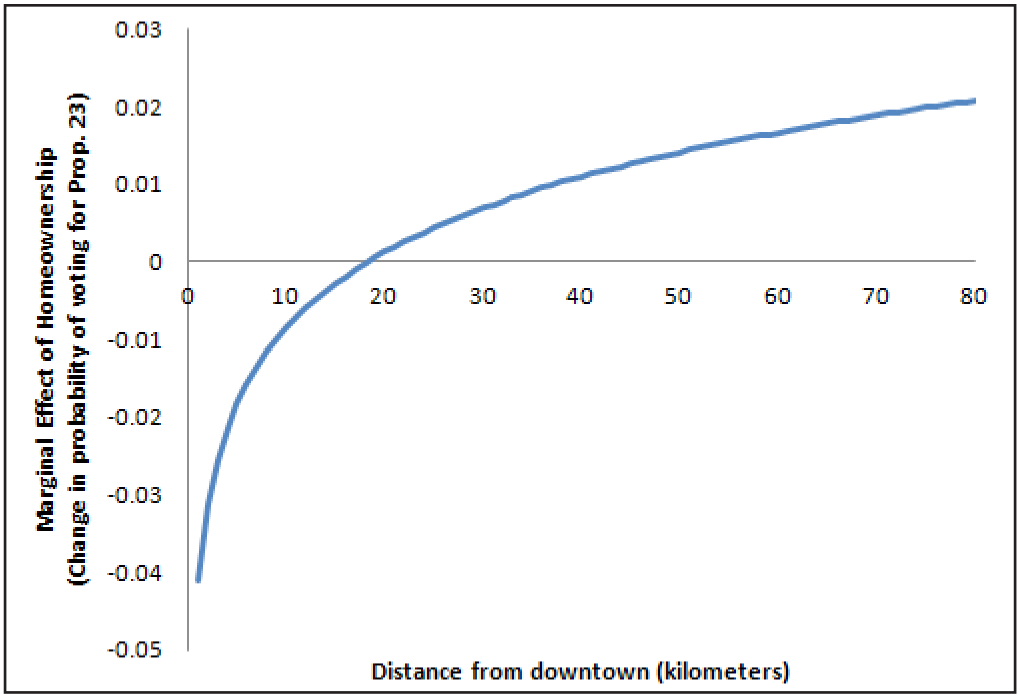

Figure 7. Marginal Effect of Homeownership on Voting for Prop. 23, By Distance to Downtown

Notes: Marginal effect is calculated as -0.041+(0.0141× lnDISTANCE), units reflect change in predicted probability of voting yes due to change in homeownership rate.

Figure 7 plots the marginal effect of homeownership on voting for Prop. 23, by distance. Increasing the homeownership rate near the city center leads to a loss of support for Prop. 23, while increasing the homeownership rate near the urban fringe leads to an increase in support for Prop. 23. This is precisely what we would expect to find if the AB 32 regulations increased the cost of GHG emissions, and if voters voted in a way to maximize their home values.

Comparing Results: Survey and Voting Data

The final Prop. 23 issues we consider are the comparability of the findings between the voting and survey data. We have already addressed these issues to some extent in our discussion of the results using voting data for Prop. 23. But, here, we distill these findings into an easy to read summary table (Table 16). The difference between the former analyses and this one is that here we make the comparison across estimates contained in Table 23 (displayed later in this chapter) and Table 27 (in Appendix B), using the more appropriate, unrestricted regressions.[67]

Table 16. Comparing Coefficient Estimates from Analysis of Survey and Voting Data for Prop. 23

Variable/Category	Coefficient Estimates Results
lnDISTANCE	Positive in both analyses, but statistically significant only in the voting data.
lnDENSITY	Negative and significant in both analyses.
HOMEOWN	Positive in the voting data, negative in the survey data, and not significant in either.*
INCOME	Shows more support for Prop. 23 among the highest income voters in the voting data, but shows support is highest among middle income groups in the survey data; both sets have some significant and some insignificant estimates.
UNEMPLOYMENT	Positive and insignificant in both.
AGE	Shows young voters are against Prop. 23 in both data sets, and statistically significant in the survey data only. However, estimates from the voting data show old voters are also against Prop. 23 (with estimates statistically significant), but the survey data shows old voters are for Prop. 23 (and this effect was statistically significant).
COLLEGE	Shows that the educated are against Prop. 23 in both data sets, but statistically significant only in the voting data.
RACE/ETHNICITY	Shows all non-White groups support Prop. 23, with significant estimates in the voting data; in the survey data, no estimates are statistically significant.**
IDEOLOGY	Shows conservative voters are for Prop. 23 in both datasets, and in all cases this variable is statistically significant.

Notes: * See discussion of interaction terms above in the text; homeownership is statistically significant in the voting data, but the effect depends on whether the location in question is suburban or urban.
** The exception here is for the OTHER category, which, as explained above, is a residual category for respondents not falling into one of the four named race/ethnicity groups.

In addition to comparing coefficient estimates for Prop. 23 across Tables 23 and 27, we also use the survey data to estimate the interaction model described above for Prop. 23 (where we include the variable INTERACT to test Hypotheses 2 and 3). In the survey data, the estimated coefficient on the interaction is negative but not significant. Likewise, the coefficient on HOMEOWN is negative but not significant. Thus, we do not find the same support for Hypotheses 2 and 3 in the survey data as we do in the voting data. This could be evidence of an inference bias, but it is also possible that the relatively small survey sample size yields small standard errors. Among the other possible explanations is that the distance measure, based on ZCTAs, is not calculated at a sufficiently refined geographical level.

Taken together, comparing results across survey and voting data shows that the results regarding Hypothesis 1 are quite robust with regard to Prop. 23. The results concerning Hypotheses 2 and 3 are less robust as they are not statistically significant in the survey data. Nonetheless, we feel that, on the whole, the results of our analysis lend support to the monocentric city model.

PROP. 181: PASSENGER RAIL AND CLEAN AIR BOND ACT (1994)

The proposition analyzed in this report’s final case study is Prop. 181, the Passenger Rail and Clean Air Bond Act of 1994. Before describing the details of this proposition, we first provide a brief history of ballot propositions from the early 1990s, because it is important to appreciate the special context of that time. Later in this report we provide more details on propositions from this time, as well as for all transit-related ballot propositions from 1990 to 2010.

From a public transit perspective, a number of fascinating propositions were considered in California in the early 1990s. Between 1990 and 1994, no less than eight propositions had a distinct transit component, with three winning majority support. Among these propositions were two proposals to increase the gasoline tax, one of which passed. We discuss these gas tax propositions at greater length in the next section. Another three propositions were legislative bond initiatives, known as the Passenger Rail and Clean Air Bond Acts of 1990, 1992 and 1994, respectively.

Prop. 108, the Passenger Rail and Clean Air Bond Act of 1990, was the first of these three major bond acts and was approved by 56% of voters. The bonds that were ultimately sold as a result of Prop. 108 provided state funding for light rail and other transit projects around the state, which were also funded with various local sources.[68] Prop. 156, the Passenger Rail and Clean Air Bond Act of 1992, was defeated by a narrow margin.

Prop. 181, the Passenger Rail and Clean Air Bond Act of 1994, was also defeated. After the 1994 election, a transit-related ballot proposition would not appear on the ballot for another four years. Few, if any, of the subsequent propositions focused so heavily on transit. Indeed, it is fair to say that the early 1990s was a unique time for understanding Californians attitudes towards transit as well as various funding mechanisms for transit infrastructure.

A good description of this proposition[69] explains that Prop. 181 is a:

> $1 billion legislative bond act that provides funds for acquisition of rights of way, capital expenditures and acquisitions of rolling stock for intercity rail, commuter rail, and rail transit programs. Background: In 1989, transit organizations and legislators agreed on a 10 year, $60 billion mass transit program. Approximately $18 billion was to be provided from state resources for capital outlay, and the rest from the federal and local governments. The first parts of the state program included two bond measures and a permanent gasoline tax increase Propositions 108, 111 and 116 and were approved by a slim margin in 1990. Two subsequent, $1 billion bond proposals, one in 1992 and the other in 1994, were placed on the ballot by the Legislature. The 1992 proposal, Proposition 156, failed. Proposition 181 is the 1994 $1 billion bond proposal.

This concludes our background discussion of this proposition. In the remainder of this section we analyze in detail Prop. 181 from 1994.[70]

Voting Data

Table 17 contains summary statistics for all of the variables used in the analysis below.[71]

Table 17. Summary Statistics, 1990 Census and Voting Data Variables

Variable	Observations	Mean	Std. Dev.	Min.	Max.
PCT_181_Y	21,266	0.37	0.13	0	1
INC0	20,924	0.20	0.15	0	1
INC25	20,924	0.20	0.11	0	1
INC50	20,924	0.21	0.09	0	1
INC100	20,924	0.20	0.13	0	1
INC150	20,924	0.07	0.11	0	1
COLLEGE	21,013	0.23	0.17	0	1
BLACK	21,021	0.07	0.16	0	1
ASIAN	21,021	0.08	0.11	0	1
OTHER	21,021	0.12	0.16	0	1
HISPANIC	21,021	0.23	0.24	0	1
YOUNG	21,021	0.29	0.12	0	1
OLD	21,021	0.12	0.10	0	1
BUSH	21,098	0.38	0.17	0	1
HOMEOWN	20,924	0.58	0.27	0	1
lnDISTANCE	20,452	2.80	0.83	0.03	4.39
lnDENSITY	21,461	7.04	2.10	0	10.95

Source: Census of Population and Housing, 1990, and SWDB voting data from 1994.

Table 18 presents our first set of regression results. As in the first two case study analyses, these results are from a restricted version of equation (1), which includes only socio-economic and demographic variables. With this restriction we are interested in the effects of these variables only.

Table 18 demonstrates, as predicted, that higher income is associated with less support for transit. Support for transit is higher when a larger fraction of the block group has a college degree. Higher proportions of non-White racial and ethnic groups are associated with support for transit, and this is most pronounced for the Black variable, somewhat pronounced for the Hispanic variable, and only slightly positive for the Asian variable. As predicted, higher proportions of elderly voters are associated with support for Prop. 181.

Next we explore the robustness of the coefficient estimates on the socio-economic and demographic variables. Looking at the coefficients on the income and demographic variables in the unrestricted version of the model (presented in column 3 of Table 22 in Chapter III), we see the income effect is less pronounced compared to the estimates in Table 18 (a restricted regression). The coefficients on the two lowest income groups remain statistically significant, but the values are less than half those in the restricted case. The coefficients on the highest income groups become statistically insignificant in this full specification. The coefficient on the COLLEGE variable remains (statistically) significant and decreases in magnitude by about 40%. All the racial and ethnic coefficients remain significant and decrease in magnitude by about half. Finally, among the age variables, only OLD remains significant, and it decreases to about one-third of the size reported in Table 18.

Table 18. OLS Regression; Prop. 181 (1994) Voting Data, Socio-Economic and Demographic-Only Restriction

Variable	Estimated Coefficients by OLS on Dependent Variable "Percent Voting Yes on Prop. 181A" PCT_181_Y
INC0	0.168***
	(0.0075)
INC25	0.0843***
	(0.0085)
INC50	0.0393***
	(0.0093)
INC100	-0.0609***
	(0.0087)
INC150	-0.0945***
	(0.0079)
COLLEGE	0.367***
	(0.0041)
BLACK	0.329***
	(0.0035)
ASIAN	0.0442***
	(0.0042)
OTHER	0.0563***
	(0.0079)
HISPANIC	0.139***
	(0.0055)
YOUNG	0.0741***
	(0.0056)
OLD	0.0389***
	(0.0057)
Constant	0.236***
	(0.0069)
Observations	20,837
R-squared	0.781
County fixed effects?	Yes

Notes: Standard error is listed in parentheses.
p-values are denoted by:
*** p<0.01
** p<0.05
* p<0.10

Table 19 presents the regression results for all of the specifications we estimated. As above, we do not report estimates of coefficients on the demographic variables, to conserve space.

Table 19. Restricted and Unrestricted OLS Regressions; Prop. 181, 1994 Voting Data

Variable	Estimated Coefficients by OLS on Dependent Variable "Percent Voting Yes on Prop. 181" PCT_181_Y				
	Socio-economic, Demographic Only	Ideology Only	Urban Form Only	All But Ideology	Unrestricted
BUSH		-0.488***			-0.345***
		(0.0030)			(0.0038)
HOMEOWN			-0.0983***	-0.0184***	-0.0219***
			(0.0022)	(0.0029)	(0.0024)
lnDISTANCE			-0.0494***	-0.0265***	-0.0158***
			(0.0008)	(0.0007)	(0.0006)
lnDENSITY			0.00425***	0.00464***	0.00142***
			(0.0004)	(0.0003)	(0.0003)
Constant	0.236***	0.602***	0.640***	0.333***	0.486***
	(0.0069)	(0.0019)	(0.0053)	(0.0085)	(0.0074)
Observations	20,837	21,020	19,805	19,800	19,723
R-squared	0.781	0.787	0.663	0.802	0.859
County fixed effects?	Yes	Yes	Yes	Yes	Yes
Demographic/ SE controls?	Yes	No	No	Yes	Yes

Notes: Standard error is listed in parentheses.
p-values are denoted by:
*** p<0.01
** p<0.05
* p<0.10

The first finding to note from Table 19 is that one variable, BUSH, the fraction voting for the Republican president in the 1992 election (which is our proxy for ideology) explains slightly more than all of the socio-economic and demographic variables combined. This is evident by the R-squared value of 0.781 in column 1, and the higher value of 0.787 in column 2. Analysis in column 3 that includes only the three urban form variables (and with the county fixed effects) results in a lower R-squared value of 0.663, while including demographic variables and urban form variables (column 4) raises the R-squared value to 0.802. Finally, in the unrestricted specification (column 5), we note the R-squared is 0.859. These values can be used to assess how well the model fits the data, with larger values indicating better fit.

It is also important to note how the coefficient estimates change when subjected to various levels of control. As noted above, the general pattern depicted in the discussion of the socio-economic and demographic only specification (where all effects are less pronounced when subjected to the full set of controls). The same pattern holds true for the ideology and urban form variables. The coefficient on ideology (BUSH) decreases in magnitude from -0.488 to -0.345 when no variables are restricted. As for the urban form variables, in column 3 the coefficient on HOMEOWN is -0.0983, the coefficient on lnDISTANCE is -0.0494, and the coefficient on lnDENSITY is 0.00425. All of these coefficient estimates decrease to about 25% of the restricted-model values when subjected to the full set of controls (unrestricted model). However, while the magnitude of the effects is lower in the unrestricted model than in the restricted model, we consistently find statistically significant coefficient estimates, lending support for our Hypothesis 1 regarding suburbanization and voting.

Finally, to test Hypotheses 2 and 3, we estimate the same interaction model presented in the first two case studies. We do not report these results here to conserve space, but we note that the results are inconsistent with our expectations. The coefficient on HOMEOWN (is -0.09 while on INTERACT it is positive) 0.024. This suggests that homeownership downtown reduces support for Prop. 181, while homeownership in the distant suburbs is associated with a slight increase in support for Prop. 181. This is exactly counter to our expectations and we do not have a good explanation for what may be driving these results.

Thus, the results of our hypotheses regarding Prop. 181 are mixed. We find strong support for Hypothesis 1 here, as above. However, although we find strong support for Hypotheses 2 and 3 in the first two case studies, here, not only do we *not* find support, but we find evidence that is exactly opposite of our expectations. At this point, all we can do is suggest that future research attempt to sort this out.

III. ALL TRANSIT-RELATED CALIFORNIA STATE BALLOT INITIATIVES, 1990-2010

As discussed in the Introduction, this is a study of 20 transit-related California ballot propositions from 1990 through 2010. We were able to find survey data, voting data, or both, for nineteen of these. In four cases we analyze only survey data, in fourteen cases we analyze only voting data, and in one case we analyze both. Table 20 indicates the availability of data for each proposition, and, for convenience, it also reproduces information about the propositions (e.g., percent in favor) from Table 2 from the Introduction.

Table 20. Data Sources and Summary Information for Ballot Propositions

Year	Month	Proposition Number	Name/Description	% Yes Vote	Survey Data	Voting Data
2010	Nov	23	Suspend AB 32 until unemployment is below 5.5% for one year	38.4	●	●
2010	Nov	22	Transportation Funding Protection	60.7		●
2008	Nov	1A	California High-Speed Rail Bond. S.B. 1856	52.7		●
2008	Nov	10	Alternative Fuel Vehicles and Renewable Energy	40.5		●
2008	Feb	91	Transportation Funding Protection	41.6		●
2006	Nov	1A	Transportation Funding Protection	77.0		●
2006	Nov	1B	Air Quality, and Port Security Bond Act	61.4		●
2006	Nov	87	Alternative energy. Tax on California oil producers	45.4		●
2002	Nov	51	Transportation Protection of Motor Vehicle Sales Tax	42.2		●
2002	Mar	42	Transportation Congestion Improvement Act	69.1	●	
1998	Nov	2	Transportation Funding Protection	75.4		●
1998	Nov	7	Air Quality Improvement	43.6		●
1994	Nov	181	Passenger Rail and Clean Air Bond Act of 1994	34.9		●
1994	Nov	185	Public Transportation Trust Funds. Gasoline Sales Tax	19.5		●
1992	Nov	156	Passenger Rail and Clean Air Bond Act of 1992	48.1		●
1992	Nov	157	Toll Roads and Highways	28.2		●
1990	Nov	125	Motor Vehicle Fuel Tax. Rail Transit Funding	45.6		
1990	Jun	108	Passenger Rail and Clean Air Bond Act of 1990	56.3	●	
1990	Jun	111	Traffic Congestion Relief and Spending Limitation Act of 1990	52.4	●	
1990	Jun	116	Rail Transportation. Bond Act	53.3	●	

Source: California Secretary of State Office (Debra Bowen), “Statewide Election Results,” http://www.sos.ca.gov/elections/statewide-elections/ (Accessed March 10, 2013).

In this section we estimate our unrestricted model for each of the propositions, where possible. Doing this is possible for all 15 of the propositions for which we have voting data. However, only one of the four propositions for which we have survey data contains enough variables to estimate the unrestricted model. Nonetheless, we come quite close to our goal of estimating either equation (1) or equation (2) for each proposition.

The propositions we analyze in this section cover a diverse array of transit issues. An implication of this is that we do not view the results as providing systematic tests of our hypotheses. For example, the hypotheses we posit require the net benefits of the proposed policies to vary spatially. It is not clear, for example, that transportation funding protection propositions have net benefits that vary spatially, and there are other propositions about which this fact would also apply.

Therefore, in the discussion below, although we touch on hypothesis tests, our aim here is not primarily to test hypotheses, but rather to look at all transportation-related ballot propositions through a common lens. We view the results we present below as a useful resource for future researchers who may have a particular interest in one of the propositions that was not our focus. To the extent possible, we also attempt to draw out similarities and broad themes in the results, but we emphasize that much of the discussion related to these results is more speculative in nature, compared to the much more careful hypothesizing presented in the three case studies of the previous chapter.

SURVEY DATA

Before presenting regression results, we briefly describe the new sources of data analyzed below, beginning with survey data sources. Three Field Poll surveys from 1990 contain questions about Propositions 108, 111, and 116. We analyze one of these surveys.[72] We describe the source of this data and the specific surveys analyzed in the Data Appendix. Thus, to study Props 108, 111, and 116 we utilize a single Field Poll survey. Unfortunately, while the survey we analyze from 1990 contains information on the respondent's county, it does not contain information at a more refined geographic area (e.g., zip code), and this fact prohibits us from estimating the unrestricted version of equation (2) for Propositions 108, 111, and 116.

To study Prop. 42 from 2002, we analyze another Field Poll survey.[73] The 2002 Field Poll survey contained questions about Prop. 42 and also contained zip code identifiers for respondents.[74] The large majority of Field Poll surveys that we pre-screened did not have zip identifiers, and so we were fortunate to locate a survey that asked about a transportation proposition *and* included zip code identifiers.[75]

VOTING DATA

As with the analysis of Prop. 181, SWDB voting data from 1992 and 1994 elections are merged with 1990 Census data for block groups. For propositions from the 1998 and 2002 elections SWDB data is merged with 2000 Census data for block groups. Finally, SWDB data from 2006 through 2010 elections are merged with 20062010 (five-year estimate) ACS data for census block groups, as is also true for the analyses of Prop. 1A and Prop. 23.

The results of estimating the unrestricted models presented above, using the above-mentioned survey and voting data, are presented in Tables 21, 22, and 23. Table 21 contains the results of the analysis of the survey data, Table 22 shows the results of the analysis of the voting data for elections taking place between 1992 and 2002, and Table 23 reports the results of the analysis of the voting data for elections taking place between 2006 and 2010. To conserve space, we do not report standard error estimates in any of these tables, however the statistical significance of the estimates is indicated by asterisks, as in all the tables of regression results reported above.

Table 21. Linear Probability Models, Survey Data, 1990 and 2004 Elections

Variable	FAVOR_PROP_108	FAVOR_PROP_111	FAVOR_PROP_116	FAVOR_PROP_42
INCOME_L_20	-0.0315	-0.0327	0.0145	0.0561
INCOME_20_40	-0.0720*	-0.0775*	0.0146	0.029
INCOME_60_P	-0.0466	0.0278	0.0641	0.0594
COLLEGE	0.106***	0.116***	0.113***	0.0660*
BLACK	0.0452	0.097	-0.104	-0.0199
ASIAN	-0.210**	-0.0378	-0.0693	0.00364
HISPANIC	-0.0453	-0.0751	-0.0362	0.0477
YOUNG	0.0501	-0.02	0.0772**	-0.0196
OLD	-0.0154	0.0733*	0.026	0.0943*
REP	-0.0892***	-0.0474	-0.150***	-0.0304
HOMEOWN	-0.0459	-0.0614	-0.0524	-0.0619
lnDISTANCE				-0.0256
lnDENSITY				-0.00375
Constant	0.775***	0.631***	0.664***	0.750***
Observations	990	1,075	956	752
R-squared	0.037	0.03	0.045	0.016
Adjusted R-squared	0.0261	0.0195	0.0334	-0.0023
County fixed effects?	No	No	No	No

Notes: Standard errors are not reported in this table.
p-values are denoted by:
*** p<0.01
** p<0.05
* p<0.10

Summary statistics for the two surveys used in the analysis reportedin Table 21 are presented in Appendix B in Tables 24 and 25. We delay interpreting the results in columns 1, 2, and 3 of Tabel 21 for now. In the last column, we analyze Prop. 42 from 2002; a transportation funding protection proposition. Perhaps due to the small sample size, we do not find any statistically significant estimates at the 5% level, and as a result not much is said about this below.

We next present results using voting data in the following two tables.

Table 22. OLS Unrestricted Regressions, Census and Voting Data, 1992, 1994, 1998, 2000 and 2002 Elections

	Using Census 1990 Data				Using Census 2000 Data		
Variable	**PCT_156_Y**	**PCT_157_Y**	**PCT_181_Y**	**PCT_185_Y**	**PCT_51_Y**	**PCT_2_Y**	**PCT_7_Y**
INC0	-0.0046	0.0307***	0.0619***	0.0835***	0.0069	-0.0268***	-0.0220***
INC25	-0.0130*	-0.0003	0.0166**	0.0455***	-0.0153**	-0.0338***	-0.0501***
INC50	-0.0260***	-0.0046	-0.0069	0.0016	-0.0136*	-0.0153***	-0.0156***
INC100	0.0248***	0.0315***	-0.0024	-0.0224***	-0.0171*	0.0078	-0.0167**
INC150	0.0922***	0.0260***	0.0056	0.0035	0.0219***	-0.00909*	0.0228***
COLLEGE	0.243***	-0.0381***	0.222***	0.300***	-0.0135***	0.159***	0.193***
BLACK	0.107***	0.234***	0.157***	-0.132***	-0.0987***	0.0273***	0.0022
ASIAN	0.0175***	0.0398***	0.0374***	-0.0431***	0.0843***	-0.0617***	0.0371***
OTHER	0.0224***	0.0679***	0.0394***	-0.0564***	0.0218***	-0.0144***	-0.0297***
HISPANIC	0.00835**	0.0129***	0.0578***	-0.0122***	0.0300***	-0.0319***	0.0835***
YOUNG	-0.0008	-0.0526***	0.0078	0.0193***	-0.00852*	-0.0042	0.0288***
OLD	0.102***	-0.0260***	0.0138***	0.00915*	-0.0323***	0.0500***	0.0151***
BUSH/DOLE	-0.365***	-0.0821***	-0.345***	-0.334***	-0.157***	-0.0660***	-0.226***
HOMEOWN	-0.0546***	-0.00959***	-0.0219***	-0.0272***	-0.0316***	-0.0323***	-0.0539***
lnDISTANCE	-0.0164***	-0.00319***	-0.0158***	-0.0173***	0.00114**	-0.00461***	-0.00966***
lnDENSITY	0.00243	0.0003	0.00142	-0.00101***	-0.00232***	0.000669***	-0.00239***
Constant	0.628***	0.311***	0.486***	0.376***	0.518***	0.825***	0.547***
Observations	19,724	19,724	19,723	19,724	21,291	21,497	21,497
R-squared	0.873	0.673	0.859	0.836	0.531	0.738	0.77
County fixed effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Standard errors are not listed in this table.
p-values are denoted by :
*** p<0.01
** p<0.05
* p<0.10

Table 23. OLS Unrestricted Regressions, Census and Voting Data, 2006, 2008 and 2010 Elections

Variable	PCT_1A_Y	PCT_1B_Y	PCT_87_Y	PCT08_1A_Y	PCT_10_Y	PCT_91_Y	PCT_22_Y	PCT_23_Y
INC_L_20	-0.0129***	0.00884	0.000659	0.0215***	0.0300***	0.00133	0.000126	0.00638
INC_20_40	-0.0125**	0.00353	-0.0224***	-0.00333	0.00399	0.00254	-0.00635	0.00147
INC_40_60	-0.00677	-0.00582	-0.00529	0.00322	-0.00572	-0.0106**	-0.0101*	-0.0073
INC_75_100	0.00664	-0.00614	0.0121*	-0.000551	-0.00355	-0.00698	-0.00545	0.000445
INC_100_P	0.0232***	0.0489***	-0.0129**	-0.00124	-0.0140***	0.0241***	-0.00471	0.0231***
COLLEGE	-0.0193***	0.0474***	0.0933***	0.0565***	-0.0776***	-0.0858***	-0.118***	-0.105***
BLACK	-0.0338***	-0.0452***	-0.0969***	-0.00628**	0.0539***	0.0938***	0.194***	0.0546***
ASIAN	0.0620***	0.0579***	-0.00251	0.0536***	0.150***	0.104***	0.0522***	0.0332***
OTHER	0.00906***	0.000818	-0.00806**	0.00364	0.0187***	0.0126***	0.0307***	0.00431
HISPANIC	0.0411***	0.0972***	-0.0539***	0.0272***	0.0799***	0.0589***	-0.0164***	0.0188***
YOUNG	-0.0100***	-0.0141***	0.0141***	0.0374***	0.0679***	-0.0225***	-0.00176	-0.00255
OLD	0.0526***	0.135***	-0.0357***	-0.00812**	-0.0243***	0.0221***	0.00864***	-0.0258***
UNEMPLOY	0.0124***	0.0271***	-0.00968*	0.0135***	0.0145***	0.0131***	-0.00614	0.00721
BUSH	0.0985***	-0.232***	-0.649***	-0.457***	-0.201***	0.132***	0.301***	0.549***
HOMEOWN	-0.0179***	-0.0342***	-0.0399***	-0.0459***	-0.0300***	-0.00346**	0.00722***	0.00125
lnDISTANCE	0.00178***	-0.00672***	-0.00725***	-0.00775***	0.00368***	0.00478***	0.00481***	0.00954***
lnDENSITY	0.00310***	0.00636***	-0.00117***	0.00268***	0.00375***	-0.00249***	-0.00290***	-0.00566***
Constant	0.687***	0.615***	0.802***	0.709***	0.373***	0.308***	0.478***	0.153***
Observations	23,016	23,017	23,016	23,025	23,025	23,015	23,033	23,033
R-squared	0.465	0.627	0.897	0.882	0.772	0.654	0.758	0.925
County fixed effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Standard errors are not listed in this table.
p-values are denoted by:
*** $p<0.01$
** $p<0.05$
* $p<0.10$

As previously discussed, Table 17 provides summary statistics for the variables used in the analysis of the 1990s elections. Summary statistics for variables used in the analysis of the 1998, 2000, and 2002 elections can be found in Table 26 in Appendix A. Table 22 is split between propositions 185 and 51 to emphasize that the independent variables in the analyses are drawn from two different census years. Due to the large number of results presented in Table 22, we delay interpreting coefficient estimates until the discussion of broad themes later in this section.

Summary statistics for the independent variables used in the analyses reported in Table 23 are reported in Table 4 (in Chapter I). Due to the large number of results presented in Table 23, we delay discussing results until the discussion of broad themes, to which we now turn.

DISCUSSION: BROAD THEMES IN TRANSPORTATION INITIATIVES

We discuss the results presented in the tables above by dividing them into three time periods: Early Period (1990-1994), Middle Period (1998-2002) and Recent Period (2006-2010).

Early Period: 1990-1994

In the case study of Prop. 181 in the previous chapter, we provide some historical context for the Early Period. As emphasized there, this early time period contains a fascinating array of propositions, from a transit perspective. For example, although it is conventional wisdom that the U.S. citizenry detests gasoline taxes, Prop. 111 (June 1990) was approved by 52.4% of voters, and raised gasoline taxes by nine cents (see summary in voter information pamphlets in Appendix C). Two other propositions from this election (Props. 108 and 116) were also approved by voters, paving the way for state bond sales to improve transportation.

As propositions 108 and 116 were bond propositions to fund rail transit, it may not be surprising that in Table 21 the coefficient on REP is negative for these propositions. However, surprisingly, the coefficient on REP for Prop. 111, which proposed a permanent increase in the gas tax, is not statistically significant. Though still negative, it is smaller in magnitude than for the other two propositions. This suggests that, at least in the 1990s, conservative voters were willing to support gas taxes. Prop. 111 promised traffic congestion relief, and we speculate that conservative voters may have been willing to support it because the text of the proposition appeared to favor funding of highway construction over transit infrastructure.

Had data been available, these three propositions would have provided fertile testing grounds for our Hypotheses 1 through 3.[76] Unfortunately, the survey data we found did not contain geographic identifiers at a sufficiently refined level, such as the census tract level, or even zip code level, and this prohibited us from generating the variables needed to test the hypotheses.

A second gas tax proposition was presented to voters in 1990 (Prop. 125). This is the one proposition in the study period for which we were unable to find any data. This lack of data is again unfortunate as our theoretical framework yields clear predictions here – suburban residents should have opposed this proposition, as it would have raised the cost of driving, and moreover the proposition proposed using the revenue to fund transit infrastructure. This proposition was defeated, receiving only 45% of the vote.[77]

In the November 1992 election, we gathered complete data on two propositions: Prop. 156 and Prop. 157 (coefficient estimate results are shown in Table 22). The first of these propositions is more interesting from the perspective of our hypotheses,[78] as it was the second of three rail transit bond initiatives. (We analyze the third of these in our Prop. 181 case study above.) Like Prop. 181, Prop. 156 failed. However, looking at the results in Table 22 for Prop. 156, we find support for Hypothesis 1, as suburban residents were more likely to vote against it (note the negative coefficient on lnDISTANCE and positive coefficient on lnDENSITY). This is to say, the results for Prop. 156 and quite similar to those for Prop. 181.

The final election in this period was the November 1994 election, which presented voters both Prop. 181 and Prop. 185. The previous chapter discusses both of these in more detail in the case study of Prop. 181. As described in the preceding paragraph the results from Prop. 181, like those from Prop. 156, lend support for our Hypothesis 1. One of the Prop. 185 results is unexpected, namely that the coefficient on lnDENSITY is negative. We would expect voters in dense neighborhoods to support gas taxes to fund transit, as the net benefits are often concentrated on these neighborhoods. We would point out that, from a review of newspaper articles on the propositions, we found that the campaign for Prop. 185 was mired in controversy, and we suspect this or another idiosyncratic aspect of this proposition may be behind the unexpected finding regarding the sign on lnDENSITY.[79] It is also possible that this controversy – rather than distaste for gas taxes – is the major reason Prop. 185 garnered such a small percent of the vote (19.5%). Nonetheless, although for propositions like Prop. 185 we expect the coefficients on lnDENSITY and lnDISTANCE to have opposite signs, in terms of our Hypothesis 1, the results concerning Prop. 185 lend at least partial support as the coefficient on lnDISTANCE is negative and significant, and interestingly is greater in magnitude than any of the lnDISTANCE coefficients presented in Table 22 for the early 1990s. To put this differently, of all propositions from the early 1990s in Table 22, suburban residents (measured by distance to downtown) were most opposed to Prop. 185.

Middle Period: 1998-2002

Four transportation-related propositions were identified from this period. Prop. 7 (1998) was an environmental proposition with a vehicle emissions component. The other three propositions from this time period (Props. 2, 42 and 51) were all what we classify as transportation funding protection propositions. The subsequent decade would see several more such protection propositions, and we discuss those in greater depth in this section. But first, we briefly discuss Prop. 7.

Supporters of Prop. 7 claimed it “Uses Private sector tax incentives to reduce toxic emissions from buses…” Individuals in urban areas should be subject to greater air pollution, as the greater concentration of vehicles in urban areas magnifies the adverse health effects of vehicular pollution. Thus, one might expect that the urban form variables would be important here. However, and similar to the results for Prop. 185, the coefficient on lnDENSITY does not confirm this expectation, although the coefficient on lnDISTANCE does. And again, similar to the case of Prop. 185, the coefficient on lnDISTANCE is greater in magnitude than another of the other propositions we consider from the decade in which it was decided. Thus, the findings regarding urban form provide mixed support for Hypothesis 1.

Regarding the transportation funding protection propositions, we must admit that we were not able to become as familiar with this class of propositions as we were with many others. At the same time, we suspect that voters may also not be very familiar with these types of propositions. As a result, our hypotheses tests here are more speculative and we offer them with the hope that our thinking may aid readers of this report who are interested in the transportation funding protection phenomenon. Given the large number of propositions that fall into this category, it would seem this is an area deserving of future attention.

The basic premise behind these funding protection propositions was to make sure taxes that people paid at the pump were to go to transportation purposes and not be siphoned-off to the general fund. For this 1998-2002 period, we have voting data for two of these protection propositions, Prop. 2 and Prop. 51. We also have survey data for one: Prop. 42. As mentioned briefly in the paragraph following Table 21, the survey data does not yield any significant estimates, and so here we focus on the results from the voting data. One aspect of this class of transportation funding protection propositions is that they are heterogeneous. As evidence, we note that Prop. 51 was endorsed by the California Transit Association (a pro-transit organization), while Prop. 2 was endorsed by the California Taxpayer Association (a fiscally conservative organization). While the coefficients on the DOLE variable (our proxy for ideology from this time period) are negative for both Props. 2 and 51, it is greater in magnitude for Prop. 51, which was endorsed by the transit association. Given what seems to be the transit focus of Prop. 51, one might expect suburban residents to be opposed to Prop. 51, but the coefficient estimates on lnDISTANCE and lnDENSITY (which are positive and negative, respectively) are contrary to this expectation.

We conclude this discussion of transportation funding protection propositions in 1998-2002 period by reiterating that more work is needed to better understand voter preferences for this class of propositions. Our results do not yield consistent findings here.

Recent Period: 2006-2010

Like the Early Period (1990-1994), the Recent Period (2006-2010) offers some fascinating propositions to analyze, some that will dramatically shape the future of transit for years to come. These include Prop. 1A and Prop. 23, discussed in detail as case studies in Chapter II.

This Recent Period (refer to Table 23) presents the continuation of the transportation funding protection movement, with Props 1A (from 2006), 91 and 22. Finally, a few other propositions are of interest. Prop. 87 was a proposed gas tax, but on producers. Two bond acts (Props. 10 and 1B) include environmental components.

We begin with the protection propositions. First, we can dispense with discussing Prop. 91, as its supporters eventually encouraged voters to vote “no,” arguing Prop. 91 was no longer needed (see the information on Prop. 91 presented in Appendix C). This sort of idiosyncrasy makes this proposition a poor candidate for analysis to draw out broad themes.

Of the remaining two propositions (Prop. 1A (2006) and Prop. 22), we see that suburban voters supported these, as seen by the positive coefficient on lnDISTANCE.[80] Conservative voters also supported these, especially Prop. 22, which can be seen by the positive coefficient on BUSH.

Turning to Prop. 87, a gas tax on oil producers, we think our hypotheses might apply here. Although supporters of this proposition argued that Prop. 87, “makes it illegal [for oil companies] to pass the cost to consumers,”[81] our knowledge of tax incidence theory suggests to us that gasoline consumers would end up paying higher prices, and many of them would come to this conclusion on their own. Indeed, the coefficient on lnDISTANCE is negative. This coefficient estimate is greater in magnitude than any other lnDISTANCE coefficient during this period except for Prop. 1A (2008) and Prop. 23.

Proposition 10 proposed $5 billion in bond sales for alternative fuel vehicles. It is not clear that the net benefits of this policy vary spatially, but it is possible that they are concentrated on suburban voters who drive more. It is also possible that they are concentrated on dense neighborhoods, which suffer from higher levels of air pollution. Prop. 1B was a transportation bond. The text of the proposition indicates the funds would be used to support both roads and transit. Thus, like Prop. 10, it is not clear that our hypotheses apply to these propositions, and it is not clear that the net benefits vary spatially.

The results in Table 23 suggest that voters perceived the net benefits of Prop. 1B as falling on urbanites, as the coefficient on lnDISTANCE is negative, and the coefficient on lnDENSITY is positive. However, for Prop. 10, the coefficient on lnDISTANCE is positive, indicating the net benefits could fall on suburbanites, but the coefficient on lnDENSITY is negative, suggesting voters might not see the net benefits of Prop. 10 as varying spatially.

In discussing the results in this section, we have not addressed the estimates on any of the socio-economic or demographic variables. We leave it to the interested reader to consult Tables 21-23. Whatever the shortcomings of a statistical approach like the one we have taken in this report, one of its virtues is that it enables conveying a large amount of data without requiring a large number of words.

This concludes our discussion of broad themes across the propositions. The major lesson we take away from the analysis presented in this section is that, although this report focuses on transportation-related propositions, the 20 propositions we selected for study in fact represent a broad range of issues, and thus, it is not easy to identify broad lessons. Further identification of broad trends is left as a task for future research.

IV. CONCLUSION

Direct legislation offers researchers a type of laboratory for studying the preferences of voters on various issues. Over the last 20 years, Californians have voted on many transit-related issues. We have estimated regressions to test a variety of hypotheses related to the role of access and capitalization effects in determining voting patterns. Economics logic predicts that a voter is more likely to support a transit investment if she is more likely to use it (the access effect) and if the voter is a homeowner who believes that her property will appreciate in value because of the home's proximity to an increasingly valuable piece of transport infrastructure (the capitalization effect).

In this report, we have presented evidence supporting both of these hypotheses. Throughout this report, we have been careful to consider other relevant factors, such as residential ideological sorting, such that liberals tend to live in the center city and conservatives tend to live in the suburbs.

Our evidence of an access effect and a capitalization effect suggests that there will be consequences of the median voter living further and further from city centers. As employment suburbanizes, this trend predicts that, all else equal, support for public transit projects will decline.

While we have presented some results using survey-level micro data, most of our regressions have been based on data featuring the census block as the unit of analysis. While we recognize the concern with ecological regressions, we believe that it is important to note that, with our focus on distance, our study's findings are less sensitive to standard ecological regression critiques than the typical paper. At no point in this paper did we state a hypothesis related to interactions of share variables, such as conjecturing that minority households who are homeowners are more likely to support public transit. This type of interaction cannot be tested using aggregate data. Instead, our focus was the distance to the CBD and public transit infrastructure gradients. In testing Hypotheses 2 and 3 we examined the interaction of a census block's share of homeowners and distance to the infrastructure, but this interaction does not suffer from an ecological regression critique because there is no variation in "distance to the transit infrastructure" for any two homeowners in the same census block. Instead, the variation that allowed us to estimate this interaction term was based on observing different communities with the same homeownership share that were different distances to the public transit infrastructure.

Turning to the implications of our results for policy, to us the most obvious implication is that encouraging urban living will cause support for transit to increase. To some, this conclusion may be obvious. However, this conclusion is not obvious to everyone, and our empirical findings provide estimates of the magnitude by which reversing suburbanization will increase political support for transit.

Previous research, including some we have produced, has documented that urban residents are more likely to use transit and also have smaller carbon footprints than suburban residents. Therefore, a policy that encourages urban living has the direct effect of increasing transit use and diminishing harmful environmental impacts. However, in this report we provided evidence that such a policy will also increase political support for transit; thus, successful pro-urban policies not only have the immediate effect of increasing transit use and lowering carbon emissions, but over time such policies will lead to better urban infrastructure, which is likely to further encourage urban living.

How can policy makers encourage urban living? We did not address this question in this report. However, based on our knowledge of the literature and previous research, we offer the following ideas. Providing more systematic answers to this question should be the focus of future research.

Policy makers at the local level are perhaps most important. We have three main suggestions for local policy makers. First, land use regulations that raise the price of urban housing should be seriously reconsidered. We recognize that there are some valid reasons, including aesthetic concerns, for limiting the height of buildings and the density of neighborhoods. Likewise, taxing developers to provide affordable housing is certainly a well-intentioned policy. However, our impression is that in many cases in California, these regulations have had the effect of raising the cost of urban housing and reducing social welfare. Thus, all land use regulations should be subject to scrutiny, no matter how well intentioned. Some of these regulations will pass the cost-benefit test, but others will not.

Second, local policy makers should work to improve schools. Many households leave cities in search of better schools, which they believe can be found in suburbs. Third, many households leave cities in search of the safety of suburbs, and local policy makers should work to improve safety.

Of course there are no magic bullets for improving schools or reducing crime, and we are agnostic about which tactics are most likely to achieve these objectives. For example, both “liberal” polices, such as increasing state-level involvement in education, and “conservative” policies, such as encouraging charter schools, have merit. Likewise, both community policing and data-driven approaches to patrolling both have their supporters and opponents, but we believe there are situations where both tactics are likely to succeed. In short, we encourage local policy makers to be creative and open-minded in their approaches to schools and policing, as these public services are critical to encouraging urban living.

State-level policy makers should try to support cities in the three areas mentioned above. The purpose of legislation like California Senate Bill 375 (2008), is to encourage cities and metropolitan planning organizations to better integrate land use and transportation plans. More polices along these lines would be welcome. Perhaps other state-level polices could be devised to help ensure that wasteful local-level land use regulations can be avoided. It is possible that state policy could also improve policing and schooling. More research in this area is needed.

At the federal level, certain anti-urban policies, such as the home mortgage interest deduction, have the effect of encouraging suburbanization. The above-mentioned local, state and federal policy recommendations have been put forward by other urban economists.[82] Our twist on these recommendations is that encouraging households to live in central cities will increase political support for transit.

Another finding of our study is that homeowners near transit infrastructure are more likely to support public transit, and this suggests that these individuals gain a larger share of the benefits of these projects. Should such findings bolster the case for these individuals paying a larger share of such projects?

We are not convinced that the answer to the above question is “yes.” However, we do think that policy makers should pay more attention to land market effects when drafting policies. This also applies when writing propositions. For example, one possible reason Prop. 111, the gas tax proposition from 1990, passed is that it bundled a gas tax, the incidence of which falls most heavily on suburban voters who drive more, with spending on road and highway infrastructure, the benefits of which fall on these same suburban voters.

Thus one non-obvious lesson from this study is that future propositions to fund transit might be bundled with policies that will benefit suburban voters. Of course, every politician is aware of the utility of bundling policies to enable compromise solutions. However, we would guess that most policy makers do not consider how seemingly unrelated policies, such as AB 32 or gas taxes, can have effects on land markets that vary spatially. Thus, one nuanced recommendation from our study is that policy makers should pay more attention to how transportation policies impact land values. For many households, their home is their single largest financial asset, and whether consciously or not, homeowners often behave – and vote – in ways consistent with maximizing the value of their home.

Finally, not only can taking land-market impacts into account help increase support for transit policies, it can also help finance transit projects. A recent report by San Francisco Planning and Urban Research Association (SPUR)[83] estimates that in the case of HSR, land value capture techniques may yield revenues at $0.406 billion. This is far lower than other categories considered, including $15.84 billion in gas tax revenue, $9.42 billion in road tolls, $3.75 billion in vehicle license fees, and regional general obligation bonds (for San Francisco and Los Angeles) of $1 billion. The final alternative funding source the SPUR report identifies is money from the state’s cap and trade program. They estimate this amount at $13.05 billion.[84]

We feel that value capture revenue can potentially be higher than estimated by SPUR. Unfortunately, very little is known about the magnitude by which land values rise as a result of various policies. Therefore, we suggest future research try to determine the extent to which these policies affect land values. An enhanced ability to determine which areas will see land values rise and fall is the key to creatively leveraging value capture to finance transit.

APPENDIX A: DATA SOURCES AND CODING TECHNIQUES

In this data appendix we outline all the data sources used in this study. We discuss coding techniques used to match various data sources, and we present summary statistics for datasets used in the text but for which we did not have space to show.

DATA BIBLIOGRAPHY

Statewide Database (SWDB). This is the source for voting data. http://statewidedatabase.org (Accessed March 15, 2013). Data used in this study was downloaded under the pages titled, "2001 Redistricting Data: 1992 - 2000 Election Census Block Data," and "2011 Redistricting Data: 2002 - 2010 Election Census Block Data."

Inter-university Consortium for Political and Social Research (ICPSR). This is the source for 1990 and 2000 Census data at the block group level. http://icpsr.umich.edu/ (Accessed March 15, 2013). Specifically, the data comes from the two studies listed below:

- U.S. Dept. of Commerce, Bureau of the Census. Census of Population and Housing, 1990 [United States]: Summary Tape File 3A. Washington, DC: U.S. Dept. of Commerce, Bureau of the Census [producer], 1992. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 1999-12-29. doi:10.3886/ICPSR09782.v1

- U.S. Dept. of Commerce. Bureau of the Census, and Inter-university Consortium for Political and Social Research. Census of Population and Housing, 2000 [United States]: Block Group Subset From Summary File 3. ICPSR13576-v1. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2004. doi:10.3886/ICPSR13576.v1

Social Explorer. This is the source for American Community Survey (ACS) data, five-year estimates (2006-2010) at the block group level. https://www.socialexplorer.com/ (Accessed March 15, 2013).

U.S. Census. This is the source for ACS Employment Status Data by Block Group, 2006—2010. This was not contained in the Social Explorer files. We obtained it at the following web address: http://www.census.gov/hhes/www/laborfor/acs_employ.html (Accessed March 15, 2013).

U.S. Census. This is the source for MSA definitions used in variable calculations. Throughout this report we use the 2006 definitions. http://www.census.gov/population/metro/ (Accessed March 15, 2013).

Neighborhood Change Database. This is the source for the data used in Figures 1 and 2 and in Table 1. Essentially, this database provides historical population data for US Census tracts, using the 2000 tract boundaries. For more information, see http://www.urban.org/publications/900555.html (Accessed May 30, 2013).

UC Data. This is the source for Field Poll survey data. This study reports on analysis from the second 1990 survey and the fourth 2002 survey. http://ucdata.berkeley.edu/ (Accessed March 15, 2013).

PPIC. This is our other source for survey data. We analyzed data from the 2010 PPIC Statewide Survey from July 2010. The topic of this survey was “Californians and the Environment.” http://www.ppic.org/content/data/2010_July.zip (Accessed May 30, 2013).

CODING TECHNIQUE DISCUSSION

This section discusses coding techniques we use to allocate block group voting and census data across time periods. Census block groups from two periods do not necessarily have the same geographic boundaries; this is problematic when merging the census demographic data from 1990 with the election results from 1992 or 1994 that are only available by the Census 2000’s block group geographic boundaries. So, to establish a block group equivalency from year 2000 back to1990 and generate weighted voting results, a method of allocation based on land area is used for block groups that do not have matching geographic boundaries. For this allocation, we must make the assumption that persons are uniformly distributed in each geographic area (block group).

This method requires the use of a geographic information system (GIS) and the Census TIGER/Line Shapefiles (spatial data) of all block groups for Census 1990, 2000 and 2010, which are publicly available from the Census site[85] or alternatively from ESRI’s site.[86] The Shapefile contains the FIPS (Federal Information Processing Standards codes) and geographic information of each block group, which can be used to calculate the areas needed for the allocation.

First, 1992 voting results at the block group level are merged with the 2000 spatial data, based on the unique FIPS number of each block group, and then the area of each of the year 2000 block groups is calculated. Next, the 2000 block group Shapefile with the merged data is overlaid onto the 1990 block group Shapefile in order to establish a 2000-to-1990 relationship data; the new shapes are created where the block group boundaries from the two layers cross and/or overlap each other. The new spatial data contain all the possible relationships between the two periods (although the census[87] provides a relationship file for each of the two periods, it does not have the land area values needed for calculations, and it requires extra steps in order to merge the voting data).

Finally, from this new spatial data, the individual land areas are calculated and divided by the corresponding year 2000 land areas in order to calculate the percentage of the 2000 land area that is contained in each 1990 block group. For example, if the year 2000 block group is exactly the same as that of 1990, or the entire block group is contained in a 1990 block group, the assigned weight is 1. However, if two or more block groups merged from 1990 or are divided, the assigned weight is less than 1. These new weights are multiplied by the merged voting results from previous steps, and then, all these multiple relationships are collapsed by their FIPS numbers, which gives us the weighted voting results. The same process is utilized for allocating the 1994 voting results. For allocating the 2002 election results with the Census 2000, the 2010 Shapefile[88] is merged with 2002 voting data, and then weights calculated in the same way.

TABLES OF SUMMARY STATISTICS

Table 24. Summary Statistics, 1990 Field Poll Survey Data

Variable	Observations	Mean	Std. Dev.	Min.	Max.
FAVOR_PR_108	1,017	0.71	0.45	0	1
FAVOR_PR_111	1,112	0.59	0.49	0	1
FAVOR_PR_116	989	0.66	0.48	0	1
INCOME_L_20	1,265	0.18	0.38	0	1
INCOME_20_40	1,265	0.34	0.47	0	1
INCOME_60_P	1,265	0.23	0.42	0	1
COLLEGE	1,309	0.34	0.47	0	1
BLACK	1,309	0.04	0.18	0	1
ASIAN	1,309	0.03	0.17	0	1
HISPANIC	1,309	0.08	0.28	0	1
YOUNG	1,309	0.29	0.46	0	1
OLD	1,309	0.18	0.39	0	1
REP	1,309	0.34	0.48	0	1
HOMEOWN	1,286	0.70	0.46	0	1

Source: The California Poll (also known as The Field Poll), number 90-02, May, 1990.

Table 25. Summary Statistics, 2002 Field Poll Survey Data

Variable	Observations	Mean	Std. Dev.	Min.	Max.
FAVOR_PROP_42	797	0.66	0.47	0	1
INCOME_L_20	1,019	0.13	0.34	0	1
INCOME_20_40	1,019	0.21	0.41	0	1
INCOME_60_P	1,019	0.40	0.49	0	1
INCOME_ REFUSED	1,019	0.06	0.24	0	1
COLLEGE	1,019	0.44	0.50	0	1
BLACK	1,019	0.08	0.27	0	1
ASIAN	1,019	0.05	0.21	0	1
HISPANIC	1,019	0.16	0.37	0	1
YOUNG	1,019	0.23	0.42	0	1
OLD	1,019	0.20	0.40	0	1
REP	1,019	0.40	0.49	0	1
HOMEOWN	1,019	0.68	0.47	0	1
lnDISTANCE	925	2.93	0.83	0.27	6.61
lnDENSITY	977	7.61	1.69	1.42	10.82

Source: The California Poll (also known as The Field Poll), number 02-04, September, 2002.

Table 26. Summary Statistics, 2000 Census and Voting Data

Variable	Observations	Mean	Std. Dev.	Min.	Max.
PCT_7_Y	21,970	0.45	0.09	0	1
PCT_51_Y	21,805	0.42	0.08	0	1
PCT_2_Y	21,971	0.74	0.07	0.25	1
PCT_BUSH	22,063	0.39	0.18	0	1
INC_0_25	21,965	1.26	0.17	1	2
INC_25_50	21,965	0.27	0.11	0	1
INC_50_75	21,965	0.19	0.08	0	1
INC_100_150	21,965	0.10	0.09	0	1
INC_150_P	21,965	0.07	0.10	0	1
COLLEGE	21,999	0.26	0.20	0	1
BLACK	22,007	0.06	0.13	0	1
ASIAN	22,007	0.10	0.13	0	1
OTHER	22,007	0.22	0.18	0	1
HISP	22,007	0.30	0.27	0	1
YOUNG	22,006	0.32	0.13	0	1
OLD	22,006	0.15	0.10	0	1
DOLE	21,663	0.38	0.19	0	1
HOMEOWN	21,966	0.59	0.27	0	1
lnDISTANCE	22,163	2.88	0.87	0	4.39
lnDENSITY	22,066	6.47	1.80	2.77	20.44

Sources: Census of Population and Housing, 2000, and Statewide Database (SWDB), multiple years.

APPENDIX B: ADDITIONAL SURVEY RESULTS

The table below presents further results from the PPIC Prop. 23 survey from 2010, by looking at the index components.

Table 27. OLS and Linear Probability Models, Survey Data, 2010; Attitudes Towards Climate Change Policy

	Estimated Coefficients by OLS on Dependent Variable, Unrestricted					
Variable	Summary Variable PROP23INDEX	"Global Warming Not a Threat" NOT_SERIOUS_ THREAT	"Oppose AB 32" OPPOSE_AB32	"Oppose State Action on Global Warming" OPPOSE_CA_ ACTION	"Wait to Address GHG" AGREE_WAIT	"Oppose Regulating GHG" OPPOSE_REGULATE
INC_L_20	-0.374***	-0.105***	-0.143***	-0.00929	0.00679	-0.124***
	(0.1350)	(0.0308)	(0.0378)	(0.0448)	(0.0449)	(0.0373)
INC_20_40	-0.489***	-0.158***	-0.108***	-0.0425	-0.0760*	-0.105***
	(0.1220)	(0.0279)	(0.0342)	(0.0406)	(0.0407)	(0.0338)
INC_40_60	-0.087	-0.0903***	-0.0389	0.0547	0.00636	-0.0189
	(0.1230)	(0.0281)	(0.0345)	(0.0409)	(0.0409)	(0.0340)
INC_80_100	-0.19	-0.0734**	-0.0596	0.0177	-0.0549	-0.0202
	(0.1330)	(0.0304)	(0.0372)	(0.0442)	(0.0442)	(0.0368)
INC_100_P	-0.276**	-0.0920***	-0.0135	-0.0301	-0.0666*	-0.0742**
	(0.1140)	(0.0262)	(0.0321)	(0.0381)	(0.0382)	(0.0317)
COLLEGE	-0.0756	0.0876	-0.303*	-0.337	0.383*	0.0937
	(0.6160)	(0.1410)	(0.1730)	(0.2050)	(0.2050)	(0.1710)
BLACK	0.0999	0.121	-0.257	-0.23	0.319	0.147
	(0.6210)	(0.1420)	(0.1740)	(0.2070)	(0.2070)	(0.1720)
ASIAN	-0.284	0.0269	-0.292*	-0.304	0.246	0.0396
	(0.6240)	(0.1430)	(0.1750)	(0.2080)	(0.2080)	(0.1730)
OTHER	-0.205**	0.0107	-0.00354	-0.0967***	-0.0842**	-0.0313
	(0.0993)	(0.0227)	(0.0279)	(0.0330)	(0.0331)	(0.0275)
HISPANIC	0.226	0.123	-0.234	-0.295	0.469**	0.163
	(0.6210)	(0.1420)	(0.1740)	(0.2070)	(0.2070)	(0.1720)
AGE_18_34	-0.195**	-0.0544***	-0.0233	-0.0960***	0.0194	-0.0407*
	(0.0773)	(0.0177)	(0.0217)	(0.0257)	(0.0258)	(0.0214)

	Estimated Coefficients by OLS on Dependent Variable, Unrestricted					
Variable	**Summary Variable PROP23INDEX**	**“Global Warming Not a Threat” NOT_SERIOUS_ THREAT**	**“Oppose AB 32” OPPOSE_AB32**	**“Oppose State Action on Global Warming” OPPOSE_CA_ ACTION**	**“Wait to Address GHG” AGREE_WAIT**	**“Oppose Regulating GHG” OPPOSE_REGULATE**
AGE_65P	0.123	-0.00359	0.0435	0.00698	0.0495	0.0261
	(0.1010)	(0.0230)	(0.0282)	(0.0335)	(0.0335)	(0.0279)
UNEMPLOY	0.0116	-0.00638	0.0173	-0.0276	0.0385	-0.0102
	(0.1290)	(0.0295)	(0.0362)	(0.0429)	(0.0430)	(0.0357)
REP	1.352***	0.308***	0.325***	0.167***	0.283***	0.270***
	(0.0779)	(0.0178)	(0.0219)	(0.0259)	(0.0260)	(0.0216)
lnDISTANCE	0.0276	0.0119	-0.00804	0.0480***	-0.0136	-0.0107
	(0.0551)	(0.0126)	(0.0155)	(0.0184)	(0.0184)	(0.0153)
lnZIPDEN	-0.0867**	-0.0123	-0.0174*	0.0013	-0.0389***	-0.0195**
	(0.0355)	(0.0081)	(0.0100)	(0.0118)	(0.0118)	(0.0099)
HOMEOWNER	-0.0896	0.0297	-0.0396*	-0.0294	-0.0248	-0.0256
	(0.0792)	(0.0181)	(0.0222)	(0.0264)	(0.0264)	(0.0219)
Constant	2.186***	0.237	0.705***	0.573**	0.239	0.433**
	(0.7680)	(0.1760)	(0.2160)	(0.2560)	(0.2560)	(0.2130)
Observations	1,937	1,937	1,937	1,937	1,937	1,937
Adjusted R-squared	0.238	0.246	0.178	0.0691	0.133	0.143

Notes: Standard error is listed in parentheses.
p-values are denoted by:
*** p<0.01
** p<0.05
* p<0.10

APPENDIX C: EXCERPTS FROM VOTER INFORMATION PAMPHLETS

Below we reproduce information from the official voter information pamphlets. These are the pamphlets produced by the Secretary of State and distributed to the public prior to elections. The University of California (Hastings College of the Law) Law Library maintains an archive of pamphlets from elections going back to 1911. We have modified the formatting of the information from these pamphlets to achieve consistency in formatting across elections.

PROP 108: Passenger Rail and Clean Air Bond Act of 1990.

This act provides for a bond issue of one billion dollars ($1,000,000,000) to provide funds for acquisition of rights-of-way, capital expenditures, and acquisitions of rolling stock for intercity rail, commuter rail, and rail transit programs. Appropriates money from state General Fund to pay off bonds. Fiscal Impact: If all authorized bonds are sold at 7.5 percent and paid over the typical 20 year period, the General Fund will incur about $1.8 billion to pay off bond principal ($1 billion) and interest ($790 million). The estimated annual cost of bond principal and interest is $90 million.

This measure authorized the state to sell $1 billion in general obligation bonds to provide funds for rail capital outlay. This authorization, however, would only take effect if voters approve proposition 111, *The Traffic Congestion Relief and Spending Limitation Act of 1990*. General obligation bonds are backed by the state, meaning that the state is obligated to pay the principal and interest cost on these bonds. General Fund revenues would be used to pay these costs. These revenues come primarily from the state corporate and personal income taxes and the state sales tax.

ARGUMENTS	
PRO	**CON**
Rail transit will remove thousands of automobiles from congested streets and highways, it will speed workers to and from their jobs and homes safely and it will reduce the dangerous pollution of the air we breathe. Rail transit is the key to a better transportation future and proposition 108, the Passenger Rail and Clean Air Bond Act, will move California into a new era of rail transit.	Our opposition to this measure is not based on the worthiness of the projects which would funded, but on the wisdom of increasing California's debt burden any further. Last year California sold more general obligation bonds than any year in its history--$1.6 billion. Thomas Hayes, State Treasurer, anticipates sales of general obligation bonds in excess of $2 billion this year.

Source: http://librarysource.uchastings.edu/ballot_pdf/1990p.pdf (accessed May 30, 2013).

PROP 111: The Traffic Congestion Relief and Spending Limitation Act of 1990.		
This measure would enact a statewide traffic congestion relief program and update the spending limit on state and local government to better reflect the needs of a growing California population. It would provide new revenues to be used to reduce traffic congestion by building state highways, local streets, and roads, and public mass transit facilities. This measure enact a 55% increase in truck weight fees and a five-cent-per-gallon increase in the fuel tax on August 1, 1990, and an additional one cent on January 1 of each of the next four years. This measure makes changes in how the appropriations limit operates and in how the minimum funding guarantee for public schools and community colleges is determined. Passage of this measure also would cause several changes in laws relating to transportation funding to take effect.		
ARGUMENTS		
PRO		**CON**
Proposition 111's innovative transportation package will spend 18.5 billion over the next 10 years to make our freeways, bridges and streets earthquake safe, complete highway and mass transit projects already authorized but not funded, fix potholes and increase maintenance of local streets and highways, reduce peak-hour traffic by expanding van, carpool and staggered work hour programs, expand local rail transit systems, improve traffic flow, improve state highways, and reduce air pollution.		This proposition is a tax increase, pure and simple. It would raise your gas tax by 9 cents per gallon, raise sales taxes, taxes on trucks, and pave the way for #3 billion more of bonded indebtedness. Over the next ten years, these new taxes would total $18.5 billion or more than $600 per man, woman and child in California. For family of our, this $2,400!

Source: http://librarysource.uchastings.edu/ballot_pdf/1990p.pdf (Accessed May 30, 2013).

PROP 116: Rail Transportation. Bond Act. Initiative Statute. 1990.		
Authorizes general obligation bond issue of $1,990,000,000 to provide funds principally for passenger and commuter rail systems, with limited funds available for public mass transit guideways, paratransit vehicles, bicycle and ferry facilities, and railroad technology museum. Allocates certain amounts to specified state and local entities through a grant program administered by the California Transportation Commission. Program will require some matching funds from local entities. Appropriates money from state General Fund to pay off bonds. Fiscal Impact: If all authorized bonds are sold at 7.5 percent interest and paid over the typical 20-year period, the General Fund will incur about $3.6 billion in cost to pay off bond principal ($2 billion) and interest ($1.6 billion). The estimated annual cost of bond principal and interest is $180 million. This measure authorized the state to sell $1.99 billion general obligation bonds to provide funds mostly for rail capital outlay. General obligation bonds are backed by the state, meaning that the state is obligated to pay the principal and interest cost on these bonds. General Fund revenues would be used to pay these costs. These revenues come primarily from the state corporate and personal income taxes and the state sales tax.		
ARGUMENTS		
PRO		**CON**
A Yes vote on Proposition 116 will reduce traffic congestion, help improve air quality, conserve energy, and protect the environment for you and your family.		This $1.99 billion Clean Air Act will neither clean the air or improve transportation. It will take money from badly needed programs including education, health care, child care, worthwhile transportation projects, and any other item in the State budget. Even More tax money will be needed to fund high operating costs of the trains.

Source: http://librarysource.uchastings.edu/ballot_pdf/1990p.pdf (Accessed May 30, 2013).

PROP 125: Motor Vehicle Fuels Tax. Rail Transit Funding. Legislative Constitutional Amendment. 1990.		
This measure would amend the Constitution to authorize expenditures from the revenues raised from state-imposed taxes on motor vehicle fuels and fees upon the operation and use of vehicles for the acquisition of rail transit vehicle and rail transit equipment which operate only on exclusive public mass transit guideways. Fiscal Impact: An unknown amount of revenues raised from the state-imposed taxes on motor vehicle fuels and fees upon the operation and use of vehicles may be shifted from existing uses for the purchase of rail transit. The extent of the shift depends upon the number of counties or geographic areas that approve and use these revenues for the specified purposes. This constitutional amendment allows Article XIX revenues to be used for the acquisition of rail transit vehicles and rail transit guideways. These uses must first be approved by a majority of the voters in the county or geographic area where the revenues are to be spent.		
ARGUMENTS		
PRO		**CON**
Proposition 125 improves rail transit without increasing taxes one cent. It allows a portion of the existing state gas tax, which is already allocated by law for mass transit capital improvements, to also be used to acquire rail transit rolling stock, such as light rail cars, rapid transit cars, and commuter/ intercity rail cars and locomotives.		Proposition 125 requires that taxes be taken from one class of citizens—automobile and truck drivers—to benefit another class of citizens—the riders of mass rail transit, who not only pay no taxes for this benefit, but ride on the backs of those who must use gasoline-powered vehicles for their private and business transportation. Prop. 125 dictates that the cost of driving an automobile or truck be fixed artificially higher—so that the cost of using a mass rail transit system can be priced artificially lower.

Source: http://librarysource.uchastings.edu/ballot_pdf/1990g.pdf (Accessed May 30, 2013).

PROP 156: Passenger Rail and Clean Air Bond Act of 1992. Bond Act.		
This Act provides for a bond issue of one billion dollars ($1,000,000,000) to provide funds for acquisition of rights-of-ways, capital expenditures, and acquisitions of rolling stock for intercity rail, commuter rail, and rail transit programs. This measure allows the state to sell $1 billion in general obligation bonds to provide fund for rail capital outlay. General obligation bonds are backed by the state, meaning that the state is required to pay the principal and interest costs on these bonds. General Fund revenues would be used to pay these costs. General Fund revenues come primarily from the state personal and corporate income taxes and the state sales and use tax.		
ARGUMENTS		
PRO		**CON**
Prop. 156 will improve and extend rail transit projects throughout California where needed most. Proposition 156 will provide jobs for California workers, alternatives to overcrowded freeways, and help people safely and efficiently. Better rail transit means fewer cars on the road, less gridlock and cleaner air. YES on 156!		Rail transit is so expensive this measure will finance few facilities. There are other transportation programs which provide much more benefit for fare lower costs. This measure will add to our budget problems. Nearly half of the rail bonds authorized by previous bond measures have still not been issued.

Source: http://librarysource.uchastings.edu/ballot_pdf/1992g.pdf (Accessed May 30, 2013).

PROP 157: Toll Roads and Highways. Legislative Constitutional Amendment. 1992.		
Provides that any toll road or toll highway owned by the state and leased to a private entity shall be permanently toll free upon the expiration of the lease or after tolls have been collected for a total of 35 years, whichever occurs first. Legislature may suspend the application of the foregoing provision to any toll roads or toll highways by a statue passed in each house by a two-thirds vote of membership. Fiscal Impact: This measure would result in the potential loss of a revenue source for highway maintenance and operations, beginning no earlier than the year 2030. Potential loss could be tens of millions of dollar annually. This Constitutional amendment band the collection of tolls on any road or highway owned by the state and leased to private entity after tolls have been collected for 35 years or upon expiration of lease (whichever occurs first). However, the Legislature could suspend the band with a two-thirds vote of each house. Absent a suspension, the state would no longer have the option of continuing toll collection on the four projects underway or any similar future projects after the leases expire or after toll have been collected for 35 years.		
ARGUMENTS		
PRO		**CON**
Prop. 157 will take tolls off private toll roads when they are turned over to the state. We already pay taxes for the right to drive on our freeways. We shouldn't have to pay expensive tolls also. Keep freeways free! Stop the tolls!		Prop 157 will lead to higher taxes. It will bail out speculators and bankers who want to build private highways to allow massive land developments. This measure would, after 35 years, turn over to public worn out highways. Taxpayers will have to pay billions to repair them. Vote NO!

Source: http://librarysource.uchastings.edu/ballot_pdf/1992g.pdf (Accessed May 30, 2013).

PROP 181: Passenger Rail and Clean Air Bond Act of 1994.		
This act provides for a bond issue of one billion dollars ($1,000,000,000) to provide funds for acquisition of rights-of-way, capital expenditures, and acquisitions of rolling stock for intercity rail, commuter rail, and rail transit program. Authorizes third of three bond issues of one billion dollars each, provided for by Statutes of 1989, Chapter 108, to finance total of three billion dollars for the long-range transportation plan. Voters approved the first issue in 1990, rejected the second issue in 1992.		
WHAT YOUR VOTE MEANS		
YES		**NO**
A YES vote on this measure means: The State would be authorized to issue $1 billion in general obligation bonds to construct rail lines and related facilities and to acquire rights-of-way, rail cars, and locomotives.		A NO vote on this measure means: The State would not be authorized to issue $1 billion in general obligation bonds to construct rail lines and related facilities and to acquire rights-of-way, rail cars, and locomotives.
ARGUMENTS		
PRO		**CON**
A Yes vote on Proposition 181 will: • Expand rail service throughout California • Reduce traffic congestion • Improve air quality • Help stimulate California's economy This isn't a new tax. Rather it authorizes the sale of $1 billion in state bonds to improve and expand intercity, commuter and urban rail system in California.		This is a billion dollar boondoggle that even the measure's author, Assemblyman Jim Costa, agrees should not be on the ballot. Taxpayers shouldn't pay for more rail projects—current ridership still lags behind capacity. Voters rejected red ink-generating bond measures in June. They should do it again.

Source: http://librarysource.uchastings.edu/ballot_pdf/1994g.pdf (Accessed May 30, 2013).

PROP 185: Public Transportation Trust Fund, Gasoline Sales Tax. Initiative Statute. 1994.		
Provides for an additional 4% tax on gasoline sales. Revenues for electric rail and clean fuel buses, light rail, commuter and intercity rail system, and other transportation-related programs, including wetlands, riparian habitat and parks. Fiscal Impact: Increased gasoline sales tax revenues of about $360 million annually. Multimillion dollar annual increases in state and local costs for mass transportation services, potentially offset by unknown amount of revenues.		
WHAT YOUR VOTE MEANS		
YES		**NO**
A YES vote on this measure means: The State would raise the sales tax on gasoline by 4 percent and use the resulting revenues to pay for (1) capital and operating improvements to passenger rail and mass transit bus services and (2) safety and operating improvements to streets and highways.		A NO vote on this measure means: The State would not raise the sales tax on gasoline to pay for 1) capital and operating improvements to passenger rail and mass transit bus services and (2) safety and operating improvements to streets and highways.
ARGUMENTS		
PRO		**CON**
Slash transportation waste and bureaucracy. Stop the Legislature from raiding transportation funds. Develop electric and clean fuel bus and rail system. Clean our air and save energy. Make road and bridges earthquake-safe. Provide transit for disabled and senior citizens. Restart California's economy. Create jobs. Vote YES on 185.		Another TAX INCREASE! A $700 million annual SALES TAX INCREASE on gasoline. 185 is double taxation! 185 also creates an ALL-POWERFUL, Sacramento COMMITTEE of three POLITICAL APPOINTEES with the sole AUTHORITY to spend billions of our taxpayers dollars. Our taxes already are TOO HIGH. VOTE NO on 185.

Source: http://librarysource.uchastings.edu/ballot_pdf/1994g.pdf (Accessed May 30, 2013).

PROP 2: Transportation Funding. Legislative Constitutional Amendment. 1998.		
Imposes repayment conditions on loans of transportation revenues to the General Fund and local entities. Designates local transportation funds as trust funds and requires a transportation purpose for their use. Fiscal Impact: Not likely to have any fiscal impact on state and local governments.		
WHAT YOUR VOTE MEANS		
YES		**NO**
A YES vote on this measure means: Additional restrictions would be placed on loans of state transportation funds to the state General Fund. In addition, local transportation funds from on-quarter cent of county sales tax could not be diverted from specified transportation purposes.		A NO vote on this measure means: Loans could continue to be made from state transportation funds to the General Fund without added restrictions. Local transportation funds derived from the on-quarter cent of county sales tax could be diverted for non-transportation purposes by changing state law.
ARGUMENTS		
PRO		**CON**
Proposition 2 will make sure the money you pay in fuel taxes is used to build and maintain California's roads and transit systems. Without paying 1C more at the pump, you can help improve transportation by joining with the California Taxpayers Association, business, labor, and environmental organizations in voting "yes."		Not Provided

Source: http://librarysource.uchastings.edu/ballot_pdf/1998g.pdf (Accessed May 30, 2013).

PROP 7: Air Quality Improvement Tax Credit. Initiative Statute. 1998.	
Authorizes $218 million in state sale tax credits annually, until January 2011, to encourage air-emissions reductions through the acquisition, conversion, and retrofitting of vehicles and equipment. Fiscal Impact: Annual State revenue loss averaging tens of millions to over a hundred million dollars, to beyond 2010. Annually, through 2010-11: state cost of about $4.7 million; additional local revenues, potentially in the millions of dollars. Potential unknown long-term savings.	
WHAT YOUR VOTE MEANS	
YES	**NO**
A YES vote on this measure means: The state Air Resources Board would administer a new tax credit program. Tax credits would be awarded through 2010 for various categories of projects that reduce emissions of pollutants into the air.	A NO vote on this measure means: The State Air Resources Board would not be directed to establish a new tax credit program designed to reduce emissions of pollutants into the air.
ARGUMENTS	
PRO	**CON**
American Lung Association, California Nurses Association, and Sacramento Chamber of Commerce support Proposition 7, the Air Quality Improvement Act. Uses Private sector tax incentives to reduce toxic emissions from buses and trucks. Cleaner air benefits the health of children and elderly. Creates no new bureaucracy. Cuts no existing programs.	Proposition 7 is corporate welfare, pure and simple. It gives tax breaks to the corporations that paid to put it on the ballot. It guarantees billions in taxpayers' money to polluters, with no accountability or regulation in return. It takes money from universities, the environment and law enforcement. Vote No.

Source: http://librarysource.uchastings.edu/ballot_pdf/1998g.pdf (Accessed May 30, 2013).

PROP 42: Transportation Congestion Improvement Act. Allocation of Existing Motor Vehicle Fuel Sales and Use Tax Revenues for Transportation Purposes Only. Legislative Constitutional Amendment. 2002.	
This measure places in the State Constitution those provisions of current law that require that, from2003–04 through 2007–08, gasoline sales tax revenues be used for specified state and local transportation purposes. The revenues would be allocated for transportation purposes specified under the TCRP. The revenues would be allocated as follows: 20 percent to public transportation. 40 percent to transportation improvement projects funded in the State Transportation Improvement Program, a five-year transportation capital investment program. 40 percent to local streets and roads improvements; with half of the amount (20 percent) allocated to counties and half to cities.	
ARGUMENTS	
PRO	**CON**
Proposition 42 is based on the principle that the gasoline sales tax you pay when filling up your tank ought to be used to improve our transportation system. That's exactly what Prop. 42 does. It requires the gasoline sales tax we're already paying be spent IMPROVING OUR HIGHWAYS, LOCAL STREETS and MASS TRANSIT—WITHOUT INCREASING OR IMPOSING ANY NEW TAXES.	PROP 42 HAS US VOTING IN 2002 ON SOMETHING THAT WILL NOT TAKE EFFECT UNTIL 2008.Do you know what California's spending priorities should be in the year 2008 or beyond? If you don't, then you should VOTE No on Prop 42.If Prop 42 passes and goes into effect in 2008, it will force $1.2billion in cuts in vital education, health care and public safety services. Are you sure we should be locking ourselves into that kind of spending priority today?

Source: http://librarysource.uchastings.edu/ballot_pdf/2002p.pdf (Accessed May 30, 2013).

PROP 51: Transportation. Distribution of Existing Motor Vehicle Sales and Use Tax. Initiative Statute. 2002.		
Redistributes portion of existing state motor vehicle sales/lease revenues from General Fund to Trust Fund for transportation, environmental, and highway and school bus safety programs. Fiscal Impact: Redirects specified General Fund revenues to transportation-related purposes, totaling about $420 million in 2002–03, $910 million in 2003–04, and increasing amounts annually thereafter, depending on increases in motor vehicle sales and leasing.		
WHAT YOUR VOTE MEANS		
YES		**NO**
A YES vote on this measure means: Thirty percent of the General Fund revenues generated from the sales tax on the lease and sale of motor vehicles could be used only for state and local transportation-related purposes, instead of being available for programs funded by the General Fund.		A NO vote on this measure means: These revenues would continue to be available for General Fund supported programs rather than only for state and local transportation-related purposes.
ARGUMENTS		
PRO		**CON**
YES on 51 dedicates EXISTING vehicle sales taxes to repair unsafe roads and highways, replace unsafe school buses, and make walk paths to school safer for children. Includes tough audit requirements. Endorsed by California Transit Association, Lung Association, Nurses Association, Safe Kids Network, firefighters, and Police Chief Arturo Venegas.		In a time of continuing budget deficits, Proposition 51 adds $1 billion to the deficit every year for special interest projects. It gives your tax dollars to campaign contributors, not California's priorities. Don't force cuts in vital services or require tax increases. Vote NO ON 51!

Source: http://librarysource.uchastings.edu/ballot_pdf/2002g.pdf (Accessed May 30, 2013).

PROP 1A: Transportation Funding Protection. Legislative Constitutional Amendment. 2006.		
Protects transportation funding for traffic congestion relief projects, safety improvements, and local streets and roads. Prohibits the state sales tax on motor vehicle fuels from being used for any purpose other than transportation improvements. Authorizes loans of these funds only in the case of severe state fiscal hardship. Requires loans of revenues from states sales tax on motor vehicle fuels to be fully repaid within the three years. Restricts loans to no more than twice in any 10-year period. Fiscal Impact: No revenue effect or cost effects. Increases stability of funding to transportation in 2007 and thereafter.		
WHAT YOUR VOTE MEANS		
YES		**NO**
A YES vote on this measure means: The State Constitution would specify additional limitations on the state's ability to suspend the transfer of gasoline sales tax revenues from the General Fund to transportation. In addition, all past suspensions would be required to be repaid by June 30, 2016, at a specified minimum rate of repayment each year.		A NO vote on this measure means: The State Constitution would not further limit the state's ability to suspend the transfer of gasoline sales tax revenues. State law, instead of the State Constitution, would specify when past suspensions would be repaid.
ARGUMENTS		
PRO		**CON**
YES on 1A dedicates taxes we already pay at the pump for transportation improvements like building roads, congestion relief, and safety repairs. 1A closes a loophole in the law to prevent politicians from spending gas taxes on other programs. Rebuild California: YES on 1A—safer roads, reduced congestion, www.ReadForYourself.org.		Vote "NO" on Proposition 1A! Keep Education, health care, and disaster relief our State's top priorities. In hard economic times, "autopilot" budgeting causes massive unnecessary cuts to schools, firefighters, trauma centers, and health care. The Governor and Legislature must have flexibility to meet the needs of Californians. Vote "NO" on Proposition 1A.

Source: http://librarysource.uchastings.edu/ballot_pdf/2006g.pdf (Accessed May 30, 2013).

PROP 1B: Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006.		
This act makes safety improvements and repairs to state highways, upgrades freeways to reduce congestion, repairs local streets and roads, upgrades highways along major transportation corridors, improves seismic safety of local bridges, expands public transit, helps complete the state's network of car pool lanes, reduces air pollution, and improves anti-terrorism security at shipping ports by providing for a bond issue not to exceed nineteen billion nine hundred twenty-five million dollars ($19,925,000,000). Fiscal Impact: State costs of approximately $38.9 billion over 30 years to repay bonds. Additional unknown state and local operations and maintenance costs.		
WHAT YOUR VOTE MEANS		
YES		**NO**
A YES vote on this measure means: The state could sell $19.9 billion in general obligation bonds, for state and local transportation improvement projects to relieve congestion, improve the movement of goods, improve air quality, and enhance the safety and security of the transportation system.		A NO vote on this measure means: The state could not sell $19.9 billion in general obligation bonds, for these purposes.
ARGUMENTS		
PRO		**CON**
YES on 1B jump-starts traffic relief, mass transit, and safety improvements in every corner of the state without raising taxes.1B builds new roads and transportation improvement projects that enhance mobility and protect our economic future. Rebuild California: YES on 1B—safer roads, reduced congestion, and a strong economy, *www.ReadForYourself.org*		California cannot afford to continue borrowing its way into a false sense of economic security. More borrowing means worsening budget deficits. A no vote will force the Legislature to focus on paying for our transportation needs with existing funds in a fiscally responsible manner. Please vote NO on 1B.

Source: http://librarysource.uchastings.edu/ballot_pdf/2006g.pdf (Accessed May 30, 2013).

PROP 87: Alternative Energy. Research, Production, Incentives. Tax on California Oil Producers. Initiative Constitutional Amendment and Statute. 2006.		
Establishes $4 billion program to reduce petroleum consumption through incentives for alternative energy, education and training. Funded by tax on California oil producers. Fiscal Impact: State oil tax revenues of $225 million to $485 million annually for alternative energy programs totaling $4 billion. State and local revenue reductions up to low tens of millions of dollars annually.		
WHAT YOUR VOTE MEANS		
YES		**NO**
A YES vote on this measure means: The state would impose a tax on oil production to support $4 billion in expenditures to develop and promote alternative energy technologies and promote the reduction of petroleum use.		A NO vote on this measure means: The state would not impose a tax on oil production to fund these activities.
ARGUMENTS		
PRO		**CON**
Vote YES on Prop. 87 and make oil companies pay their fair share for cleaner, cheaper energy. Oil companies pay billions in oil drilling fees in Alaska and Texas—but almost nothing in California. Prop. 87 makes oil companies pay and makes it illegal to pass the cost to consumers.		$4 BILLION oil tax increase! HIGHER GAS PRICES. HUGE BUREAUCRACY, LACKS ACCOUNTABILITY. No requirement they produce results. DENIES REVENUES to SCHOOLS. We need alternative energy, but Proposition 87 is not the way to get there. CA Taxpayers' Association, small business, labor, schools, police, firefighters, farmers, Auto Club say: Vote NO.

Source: http://librarysource.uchastings.edu/ballot_pdf/2006g.pdf (Accessed May 30, 2013).

PROP 91: Transportation Funds. Initiative Constitutional Amendment. February 2008.		
Prohibits certain motor vehicle fuel taxes from being retained in General Fund and delays repayment of such taxes previously retained. Changes how and when General Fund borrowing of certain transportation funds is allowed. Fiscal Impact: Increases stability of state funding for highways, streets, and roads and may decrease stability of state funding for public transit. May reduce stability of certain local funds for public transit.		
WHAT YOUR VOTE MEANS		
YES		**NO**
A YES vote on this measure means: The state would no longer be able to suspend the transfer of gasoline sales tax revenue from the General Fund to transportation. In addition, the state would be able to loan specified transportation funds, potentially including certain local transportation funds, to the General Fund for essentially short-term cash flow purposes only. The state, however, may be able to loan to the General Fund, without express time limitation for repayment, certain state funds for public transit.		A NO vote on this measure means: The state would still be able to suspend, under certain conditions, the transfer of gasoline sales tax revenue from the General Fund to transportation. Additionally, the state would continue to be able, under certain conditions, to loan specified transportation funds to the General Fund for up to three fiscal years.
ARGUMENTS		
PRO		**CON**
Prop. 91 is NO LONGER NEEDED. Please VOTE NO. Voters passed Proposition 1A in 2006, accomplishing what Prop. 91 set out to do. Prop. 1A stopped Sacramento politicians from taking our gas tax dollars and using those funds for non-transportation purposes. Prop. 91 is no longer needed. VOTE NO.		No argument against Proposition 91 was submitted.

Source: http://librarysource.uchastings.edu/ballot_pdf/2008p.pdf (Accessed May 30, 2013).

PROP 1A: Safe, Reliable High-Speed Passenger Train Bond Act. Legislative Initiative Amendment. 2008.		
To provide Californians a safe, convenient, affordable, and reliable alternative to driving and high gas prices; to provide good-paying jobs and improve California's economy while reducing air pollution, global warming greenhouse gases, and our dependence on foreign oil, shall $9.95 billion in bonds be issued to establish a clean, efficient high-speed train service linking Southern California, the Sacramento/San Joaquin Valley, and the San Francisco Bay Area, with at least 90 percent of bond funds spent for specific projects, with private and public matching funds required, including, but not limited to, federal funds, funds from revenue bonds, and local funds, and all bond funds subject to independent audits? Fiscal Impact: State costs of $19.4 billion, assuming 30 years to pay both principal and interest costs of the bonds. Payments would average about $647 million per year. When constructed, unknown operation and maintenance costs, probably over $1 billion annually; at least partially, and potentially fully, offset by passenger fares.		
WHAT YOUR VOTE MEANS		
YES		**NO**
A YES vote on this measure means: The state could sell $9.95 billion in general obligation bonds, to plan and to partially fund the construction of a high-speed train system in California, and to make capital improvements to state and local rail services.		A NO vote on this measure means: The state could not sell $9.95 billion in general obligation bonds for these purposes.
ARGUMENTS		
PRO		**CON**
California's transportation system is broken: skyrocketing gasoline prices and gridlocked freeways and airports. High-speed trains are the new transportation option that reduces greenhouse gases and dependence on foreign oil. High-speed trains are cheaper than building new highways and airports to meet population growth and require NO NEW TAXES.		Prop. 1A is a huge boondoggle. Taxpayers pay at least $640,000,000 per year in costs for a government run railroad. There's no guarantee it will ever get built. Expand existing transportation systems instead to cut commutes and save fuel. No on 1A: an open taxpayer checkbook with virtually no accountability.

Source: http://librarysource.uchastings.edu/ballot_pdf/2008gu.pdf (Accessed May 30, 2013).

PROP 10: Alternative Fuel Vehicles and Renewable Energy. Bonds. Initiative Statute. 2008.		
Authorizes $5 billion in bonds paid from state's General Fund, to help consumers and others purchase certain vehicles, and to fund research in renewable energy and alternative fuel vehicles. Fiscal Impact: State cost of about $10 billion over 30 years to repay bonds. Increased state and local revenues, potentially totaling several tens of millions of dollars through 2019. Potential state administrative costs up to about $10 million annually.		
WHAT YOUR VOTE MEANS		
YES		**NO**
A YES vote on this measure means: The state could sell $5 billion in general obligation bonds for various renewable energy, alternative fuel, energy efficiency, and air emissions reduction purposes.		A NO vote on this measure means: The state would not sell $5 billion in general obligation bonds for these purposes.
ARGUMENTS		
PRO		**CON**
YES ON 10: ENERGY INDEPENDENCE AND CLEAN AIR. PRODUCES more electricity from renewable sources, including solar and wind. GIVES Californians rebates to purchase clean alternative fuel vehicles. GETS polluting diesels off roads. INCREASES grants to California universities to develop cheaper alternatives to gasoline. REQUIRES strict accountability/audits. No new taxes.		Proposition 10 is special interest legislation which gives away $10 billion in taxpayer dollars to primarily benefit one company with little accountability and NO guarantees of environmental benefit. Don't hurt our schools and services in a time of budget crisis. Vote NO on Prop. 10!

Source: http://librarysource.uchastings.edu/ballot_pdf/2008g.pdf (Accessed May 30, 2013).

PROP 22: Prohibits the State from borrowing or taking funds used for transportation, redevelopment, or local government projects and services. Initiative Constitutional Amendment. 2010.		
Prohibits State, even during severe fiscal hardship, from delaying distribution of tax revenues for these purposes. Fiscal Impact: Decreased state General Fund spending and/or increased state revenues, probably in the range of $1 billion to several billions of dollars annually. Comparable increases in funding for state and local transportation programs and local redevelopment.		
WHAT YOUR VOTE MEANS		
YES		**NO**
A YES vote on this measure means: The state's authority to use or redirect state fuel tax and local property tax revenues would be significantly restricted.		A NO vote on this measure means: The state's current authority over state fuel tax and local property tax revenues would not be affected.
ARGUMENTS		
PRO		**CON**
YES on 22 stops state politicians from taking local government funds. 22 stops the State from taking gas taxes voters have dedicated to transportation. 22 protects local services: 9-1-1 emergency response, police, fire, libraries, transit, road repairs. Supported by California Fire Chiefs Association, California Police Chiefs Association, California Library Association.		California's teachers, firefighters, nurses, and taxpayer advocates say NO on 22. If 22 passes, public schools stand to lose billions of dollars. 22 takes money firefighters use to fight fires and natural disasters while protecting redevelopment agencies and their developer friends. Another proposition that sounds good, but makes things worse.

Source: http://librarysource.uchastings.edu/ballot_pdf/2010g.pdf (Accessed May 30, 2013).

PROP 23: Suspends implementation of air pollution control law (AB 32) requiring major sources of emissions to report and reduce greenhouse gas emissions that cause global warming, until unemployment drops to 5.5 percent or less for full year. Initiative statute. 2010.		
Fiscal Impact: Likely modest net increase in overall economic activity in the state from suspension of greenhouse gases regulatory activity, resulting in a potentially significant net increase in state and local revenues.		
WHAT YOUR VOTE MEANS		
YES		**NO**
A YES vote on this measure means: Certain existing and proposed regulations authorized under state law (“Assembly Bill 32”) to address global warming would be suspended. These regulations would remain suspended until the state unemployment rate drops to 5.5 percent or lower for one year.		A NO vote on this measure means: The state could continue to implement the measures authorized under Assembly Bill 32 to address global warming.
ARGUMENTS		
PRO		**CON**
Yes on 23 saves jobs, prevents energy tax increases, and helps families, while preserving California’s clean air and water laws. California can’t afford self-imposed energy costs that don’t reduce global warming. 2.3 million Californians are unemployed; Proposition 23 will save over a million jobs that would otherwise be destroyed. www.yeson23.com		Texas oil companies designed 23 to kill clean energy and air pollution standards in California. 23 threatens public health with more air pollution, increases dependence on costly oil, and kills competition from job-creating California wind and solar companies. American Lung Association in California, California Professional Firefighters: NO on 23.

Source: http://librarysource.uchastings.edu/ballot_pdf/2010g.pdf (Accessed May 30, 2013).

ABBREVIATIONS AND ACRONYMS

AB 32	Assembly Bill 32 (Global Warming Solutions Act of 2006)
ACES	American Clean Energy Act
ACS	American Community Survey
CARB	California Air Resources Board
CaHSRA	California High-Speed Rail Authority
CBD	Central Business District
GHG	Greenhouse Gas
HSR	High-Speed Rail
ICPSR	Inter-university Consortium for Political and Social Research
MPH	Miles per Hour
MSA	Metropolitan Statistical Area
OLS	Ordinary Least Squares
PPIC	Public Policy Institute of California
Prop.	Proposition
R2	R-squared (Coefficient of Determination)
SPUR	San Francisco Planning and Urban Research Association
SWDB	Statewide Database (http://statewidedatabase.org)
ZCTA	Zip Code Tabulation Areas

ENDNOTES

1. http://ballotpedia.org/wiki/index.php/California_%22Stop_the_$100_Billion_Bullet_Train_to_Nowhere%22_Initiative_%282014%29 (Accessed May 28, 2013).

2. Edward Glaeser and Matthew Kahn, “The Greenness of Cities: Carbon Dioxide Emissions and Urban Development,” *Journal of Urban Economics*, 67 (2010): 404–418.

3. See the Data Appendix for references to these and other sources referenced in this section.

4. These studies include Kahn and Matsusaka (1997) and Kahn (2002, 2007). Deacon and Shapiro (1975) developed the theoretical underpinning for this approach and applied it to two specific issues with suggestive but promising results. Fischel (1979) used data from a survey that he conducted to study voting on environmental measures in New Hampshire localities; his technique of analyzing data from individual voters gave results similar to those utilizing community averages, providing some justification for the employment of aggregate data in such tasks. Matthew E. Kahn and John G. Matsusaka, “Demand for Environmental Goods: Evidence from Voting Patterns on California Initiatives,” *Journal of Law and Economics* 40 (1997): 137-174; Matthew E. Kahn, “Demographic Change and the Demand for Environmental Regulation,” *Journal of Policy Analysis and Management* 21 (2002): 45-62; Matthew E. Kahn, “Do greens drive Hummers or hybrids? Environmental ideology as a determinant of consumer choice,” *Journal of Environmental Economics and Management* 57 (2007): 129–145; William A. Fischel, “Determinants of voting on environmental quality: A study of a New Hampshire pulp mill referendum,” *Journal of Environmental Economics and Management* 6 (1979): 107-118; Robert Deacon and Perry Shapiro, “Private Preference for Collective Goods Revealed Through Voting on Referenda,” *The American Economic Review* 65 (1975): 943-955.

5. Xiaoyu Wu and Bowman Cutter, “Who votes for public environmental goods in California? Evidence from a spatial analysis of voting for environmental ballot measures,” *Ecological Economics* 70 (2011): 554–563.

6. Erzo Luttmer, “Group Loyalty and the Taste for Redistribution,” *Journal of Political Economy* 109 (2001): 500-528.

7. Christian Allen Vossler, Joe Kerkvliet, Stephen Polasky, and Olesya Gainutdinova, “Externally validating contingent valuation: an open-space survey and referendum in Corvallis, Oregon,” *Journal of Economic Behavior & Organization* 51 (2003): 261-277.

8. Felix Schläpfer, Anna Roschewitz, and Nick Hanley, “Validation of stated preferences for public goods: a comparison of contingent valuation survey response and voting behaviour,” *Ecological Economics* 51 (2004): 1-16.

9. Felix Schläpfer and Nick Hanley, "Contingent Valuation and Collective Choice," *Kyklos* 59 (2006): 115-135.

10. Robert J. Johnston, "Is hypothetical bias universal? Validating contingent valuation responses using a binding public referendum," *Journal of Environmental Economics and Management* 52 (2006): 469–481.

11. Richard T. Carson, W. Michael Hanemann, and Robert Cameron Mitchell, "The Use of Simulated Political Markets to Value Public Goods," *Discussion paper* 87–7, 1987.

12. Richard Werbel, and Peter J. Haas, *Factors Influencing Voting Results of Local Transportation Funding Initiatives with a Substantial Transit Component: Case Studies of Ballot Measures in Eleven Communities* (San Jose, CA: MTI Publications, 2001).

13. Peter J. Haas, Kristen Sullivan Massey, Linda O. Valenty, and Richard Werbel, *Why Campaigns for Local Transportation Funding Initiatives Succeed or Fail: An Analysis of Four Communities and National Data* (San Jose, CA: MTI Publications, 2000).

14. Robert Hannay and Martin Wachs, "Factors influencing support for local transportation sales tax measures," *Transportation* 34 (2007): 17-35.

15. Peter Haas, *Revisiting Factors Associated with the Success of Ballot Initiatives with a Substantial Rail Transit Component* (San Jose, CA: MTI Publications, 2011).

16. Elisabeth R. Gerber, Arthur Lupia, Mathew D. McCubbins, and D. Roderick Kiewiet, *Stealing the Initiative: How State Government Responds to Direct Democracy* (Upper Saddle River, NJ: Prentice Hall, 2001).

17. Steven Sexton, Jun Jie Wu and David Zilberman, "How High Gas Prices Triggered the Housing Crisis: Theory and Empirical Evidence," Working Paper, 2012; Thomas Blake, "What's Exile to the Exurbs Worth? Commuting Costs and Geographic Sorting in the Housing Market," Working Paper, 2012.

18. Matthew Whittaker, Gary M. Segura, and Shaun Bowler, "Racial/Ethnic Group Attitudes toward Environmental Protection in California: Is "Environmentalism" Still a White Phenomenon?," *Political Research Quarterly* 58 (2005): 435-447.

19. Robert W. Wassmer and Edward L. Lascher, Jr, "Who Supports Local Growth and Regional Planning to Deal with Its Consequences?," *Urban Affairs Review* 41 (2006): 621-645.

20. Paul G. Lewis and Mark Baldassare, "The Complexity of Public Attitudes toward Compact Development: Survey Evidence from Five States," *Journal of the American Planning* 76 (2010): 219-237.

21. Deacon, Robert T. and Felix Schläpfer. “The Spatial Range of Public Goods Revealed Through Referendum Voting.” *Environmental & Resource Economics* 47 (2010): 305–328.

22. Elisabeth R. Gerber, Arthur Lupia, Mathew D. McCubbins, and D. Roderick Kiewiet, *Stealing the Initiative: How State Government Responds to Direct Democracy* (Upper Saddle River, NJ: Prentice Hall, 2001).

23. Starting in 1998 with Prop. 2, then Prop. 51 in 2002, Prop. 1A in 2006, Prop. 91 in 2008, and ending with Prop. 22 from 2010. Prop. 42 can also be thought of as a transportation funding protection initiative.

24. In fact, the success rate for these propositions is higher than this. Prop. 91, from 2008, should arguably be excluded from this list as its supporters eventually encouraged voters to vote “no,” arguing Prop. 91 was no longer needed. Accounting for this, the transportation projection propositions actually have a 80% pass rate.

25. A similar idea is discussed in the work by Agrawal and co-authors. Asha W. Agrawal, Jennifer Dill, and Hilary Nixon, *“Green” Transportation Taxes and Fees: A Survey Of Californians* (San Jose, CA: MTI Publications, 2009).

26. California Official Voter Information Guide, “Ballot Measures Defined,” http://vote2002.sos.ca.gov/2002-vig/default_sid=4&id=108.asp (Accessed March 10, 2013).

27. Institute of Governmental Studies, “California Ballot Measure Guides,” http://igs.berkeley.edu/library/california-ballot-measure-guides (Accessed March 10, 2013).

28. A reviewer suggested that suburban voters may support transit because either they believe it will: 1.) relieve congestion, or 2.) benefit low-income residents whose welfare they care about. These are valid points, and could be considered as a counter-hypothesis to the one we suggest.

29. Glaeser and Kahn (2010) document that suburban households produce more greenhouse gas emissions from transportation and home heating than do urban households. Holian and Kahn (2012, 2013) confirm these findings with respect to transportation, using more recent data, more control variables, as well as geographically more refined measures of suburbanization. Matthew J. Holian and Matthew E. Kahn, *The Impact of Center City Economic and Cultural Vibrancy on Greenhouse Gas Emissions from Transportation* (San Jose, CA: MTI Publications, 2012); Matthew J. Holian and Matthew E. Kahn, “The Rise of the Low Carbon Consumer City,” *NBER Working Paper* No. w18735, 2013.

30. Michael I. Cragg, Yuyu Zhou, Kevin Gurney, and Matthew E. Kahn, “Carbon Geography: The Political Economy of Congressional Support For Legislation Intended to Mitigate Greenhouse Gas Production,” *Economic Inuiry* 51 (2013): 1640-1650.

31. William A. Fischel, *The Homevoter Hypothesis: How Home Values Influence Local Government Taxation, School Finance, and Land-Use Policies* (Cambridge, MA: Harvard University Press, 2001).

32. We recognize proximity to, for example, train tracks will tend to lower value. Here, we refer to infrastructure such as rail stations.

33. See Brueckner (2011), pages 46-47 for a highly readable description of this theory, accessible to a reader with background in college- level economic theory. Jan K. Brueckner, *Lectures on Urban Economics* (Cambridge, MA: The MIT Press, 2011).

34. Technically, the unit of analysis in our study of the voting data is the census block group. We merge voting data to block groups. However, it is less intuitive to describe "the percent of the block group voting for X," because most readers know that in the U.S. voting takes place in precincts whose boundaries rarely coincide with block groups.

35. One final issue that has been brought up in discussions of this work is that not everyone votes. This has several implications. For one, the census measures will not perfectly summarize the electorate. Also, any social welfare measures based on the sample of voters will not be perfectly representative of the population as a whole. There are, for example, citizenship issues, spatially varying levels of apathy, and other sample-population correspondences to sort out. Due to time constraints, we have not addressed these issues here, and we leave them for future research.

36. As another way of dealing with omitted variable bias we also estimated spatial econometric models following Wu and Cutter (2011). We estimated this model using the method of maximum likelihood, implemented using the spivreg function in the Stata software package. In particular, we aimed to control for the omitted variables problem by estimating a spatial-autoregressive model with spatial-autoregressive disturbances. Such a model is known as an SARAR model in the field of spatial econometrics, and it is becoming an increasingly common model in practice. However, because spatial techniques represent a relatively recent econometric advance, there is not yet widespread agreement among applied researchers as to how spatial techniques should be used in analysis. (For example, Wu and Cutter estimate spatial (SARAR) and nonspatial (OLS) models and compare the coefficient estimates. However, Lesage and Dominquez (2012, p. 528) write, "…the common practice of comparing OLS and spatial regression coefficient estimates in public choice applications of spatial regression should be eliminated.") To conserve space in a report that already contains many tables of regression results, we do not present the results of our spatial analysis here, but we note that our findings did not indicate to us that our coefficient estimates suffer from omitted variable bias. StataCorp, LLC, "STATA® Data Analysis and Statistical Software." http://www.stata.com (Accessed May 25, 2013); LeSage, James P. and Matthew Dominguez. "The importance of modeling spatial spillovers in public choice analysis." *Public Choice* 150 (2012): 528. For details on the spivreg function, see David M. Drukker, Prucha, Ingmar R. and Raciborski, Rafal. 2011. A command for estimating spatial-autoregressive models with spatial-autoregressive

disturbances and additional endogenous variables. The Stata Journal, Vol 1, Number 1: 1–13.

37. This quote comes from page 71 of the 1994 General Election Voter Information Pamphlet. http://librarysource.uchastings.edu/ballot_pdf/1994g.pdf (Accessed May 30, 2013).

38. Ibid., 69.

39. California Legislative Information (Official), “SB 1420 Senate Bill - CHAPTERED,” [text of California Senate Bill SB 1420] http://www.leginfo.ca.gov/pub/95-96/bill/sen/sb_1401-1450/sb_1420_bill_960924_chaptered.html (Accessed March 10, 2013).

40. California High-Speed Rail Authority (CaHSRA), “California High-Speed Rail Program Revised 2012 Business Plan,” (April 2012) http://www.cahighspeedrail.ca.gov/WorkArea/DownloadAsset.aspx?id=12242 (Accessed March 10, 2013). This most recent report was produced by KPMG. Earlier reports were produced by Charles River Associates in 2001, Cambridge Systematics in 2008, and Parsons Brinkerhoff in 2011. Comments by Rod Diridon, “California High-Speed Rail and Why It’s Important for the Nation,” RITA - Monthly Webcasting Event for August 15, 2012, http://mediasite.yorkcast.com/webcast/Viewer/?peid=7b7cc7961ffc4fa9bdbf47f6c530578f1d. The CaHSRA website contains several of these and related documents: http://www.cahighspeedrail.ca.gov/Business_Plan_reports.aspx (Accessed February 15, 2012).

41. The source for this quote is the 2008 Official Voter Information Guide Supplement. http://librarysource.uchastings.edu/ballot_pdf/2008gu.pdf (Accessed May 30, 2013).

42. Steven Brakman, Harry Garretsen, and Marc Schramm, “The empirical relevance of the new economic geography: Testing for a spatial wage structure in Germany,” *CESifo Working Paper Series* No. 395, 2000, http://www.cesifo-group.de/portal/pls/portal/docs/1/1190850.pdf (Accessed March 10, 2013).

43. Ibid.

44. If a voter visited the CaHSRA webpage before the election, he/she would have seen a route map on cahighspeedrail.ca.gov that we reviewed (from 10/15/2008, http://web.archive.org/web/20081015154427/http://www.cahighspeedrail.ca.gov/) This route map is identical in terms of route and stations to our Figure 5. The 2008 map listed the following stations names: San Francisco, SFO Airport, Redwood City/Palo Alto, San Jose, Gilroy, Fresno, Visalia/Tulare/Hanford, Bakersfield, Palmdale, Sylmar, Burbank, Los Angeles. This map also listed the following stations North of Fresno: Sacramento, Stockton, Modesto, Merced, and the following stations south of Los Angeles: Norwalk, Anaheim, Irvine, City of Industry, Ontario Airport, UC Riverside, Murrietta, Escondido, University City, San Diego.

45. United States Census Bureau, “Labor Force Statistics,” http://www.census.gov/hhes/www/laborfor/acs_employ.html (Accessed March 10, 2013).

46. We considered and briefly experimented with an alternative coding method where households beyond the fringe are dropped from the sample; the results did not appear to differ substantially across the two methods.

47. Including only county fixed effects, the R2 is 0.4927. Including only BUSH (and no county fixed effects), the R2 is 0.7364.

48. To determine HSR station locations, we used the CaHSRA website "Interactive Map" page. The stations listed were the same as listed on the CaHSRA website on October 15, 2008, and those listed in our Figure 5, but the more recent website also supplied maps of station locations, or at a minimum, the general neighborhood. The exception to this is the station at Visalia/Tulare/Hanford; the most recent business plan, cited in note 15 above, confirms the general location of this station has still not been determined. In our distance calculations, we did not include any location for the Visalia/Tulare/Hanford station. For all the other stations, we clicked on the station map on the HSR authority website, which as stated above returned a general neighborhood, and we then determined the centroid of this neighborhood. We then calculated the distance from each block group to each station location, and then found for each block group the minimum distance to a HSR station. Interested parties may contact us for our list of geocoded station locations. CaHSRA, "Interactive Map," http://www.cahighspeedrail.ca.gov/trip_planner.aspx (Accessed 11/11/2012).

49. Legislative bond initiatives like Prop 1A use general fund revenue to service bond repayment. Thus, it is not clear how new bond obligations would impact any particular homeowner. We admit, voters will not be sure about this either, but we believe they will assume that to repay these bonds either their taxes will go up, or other services provided by the state (e.g., highway patrol) will diminish. This is another way of saying that we assume homeowners do not believe in free lunches. Also, as discussed above, it is possible that the benefits of HSR are so large that it will generate net benefits even for suburban households on the urban fringe. However, given that Prop 1A only garnered 52% of the vote, it at least appears that voters did not perceive such massive benefits from the project.

50. The counties we include in the Central Valley subsample are Fresno, Kern, Kings, Madera, Merced, San Benito, and Tulare. As of February 2013, the state legislature had authorized bond sales, and construction appears set to begin in July of 2013, (according to Vartabedian, 2013), though earlier claims by the CaHSRA, (CaHSRA web page: "Starting in the Central Valley," no publish date), scheduled construction to begin in the second half of 2012. A recent event at San Jose State University featuring the current CaHSRA Board Chairperson and other speakers provided a useful picture of the current state of the project and areas of current contention. Eric Kurhi reported on this event. Ralph Vartabedian, "California still hasn't bought land for bullet train route," *Los Angeles Times*, January 27, 2013, http://www.latimes.com/news/local/la-me-bullet-land-20130127,0,6688039.story (Accessed March 10, 2013); CaHSRA, "Starting in the Central Valley," (no publish date cited) http://www.cahighspeedrail.ca.gov/centralvalleystart.aspx (Accessed March 10, 2013); Eric Kurhi, "Bullet train chief, critic have dueling views at San Jose forum," *San Jose Mercury News*, November

29, 2012, http://www.mercurynews.com/california-high-speed-rail/ci_22095957/bullet-train-chief-opponent-have-dueling-views-at (Accessed March 10, 2013).

51. To conserve space we do not include a separate table of summary statistics for the Central Valley subsample. There are differences and similarities between this subsample and the statewide sample. Support for Prop. 1A was basically the same in both, as measured by the fraction supporting Prop. 1A, though support was slightly lower in the Central Valley. This is despite the fact that the average of BUSH was 0.55 in the Central Valley (compared to 0.41 for the state as a whole). Other noticeable differences between summary statistics are that the value of COLLEGE is half of the state-level average in the Central Valley, where there are also more lower-income households.

52. Michael Hanemann, "How California Came to Pass AB 32, the Global Warming Solutions Act of 2006," http://escholarship.org/uc/item/1vb0j4d6 (Accessed March 10, 2013).

53. Ibid., 3.

54. Estimates of GHG emission trends in California are supplied by CARB in the "Trends in California Greenhouse Gas Emissions for 2000 to 2009" on the California Environmental Protection Agency website. According to this document, "California's gross emissions of greenhouse gas decreased 1.5% between 2000 and 2009" (p. 1). For more information on AB 32 and associated regulations and market mechanisms, see "Assembly Bill 32: Global Warming Solutions Act," also on that website. California Environmental Protection Agency, "Trends in California Greenhouse Gas Emissions for 2000 to 2009," http://www.arb.ca.gov/cc/inventory/pubs/reports/ghg_inventory_00-09_trends.pdf (Accessed March 10, 2013); California Environmental Protection Agency, "Assembly Bill 32: Global Warming Solutions Act." http://www.arb.ca.gov/cc/ab32/ab32.htm (Accessed March 10, 2013).

55. This is from page 6 of the 2010 general election Official Voter Information Guide, http://librarysource.uchastings.edu/ballot_pdf/2010g.pdf (Accessed May 30, 2013).

56. This is perhaps the best recent example of how California is a policy trendsetter. For more information, see the Sierra Club (November 2012) article. In this case, the first light duty vehicle GHG emission standard actually preceded AB 32, but CARB has continued to implement this and other regulations with identical policy goals. Sierra Club California, "Light Duty Vehicle Greenhouse Gas Emissions Standards," (November 13, 2012) http://sierraclubcalifornia.org/campaigns/drive-green-california/light-duty-vehicle-greenhouse-gas-emissions-standards (Accessed March 10, 2013).

57. Information on these and other regulations can be found at California Environmental Protection Agency, "Fact Sheets / FAQs," http://www.arb.ca.gov/cc/facts/facts.htm (Accessed March 10, 2013).

58. Ian W.H. Parry and Kenneth A. Small, “Should Urban Transit Subsidies Be Reduced?,” *The American Economic Review* 99 (2009): 700-724.

59. Christopher R. Knittel, “Reducing Petroleum Consumption from Transportation,” *Journal of Economic Perspectives* 26 (2012): 93-118.

60. Though not as refined as our measure of these variables calculated using census block group centroids in the voting data.

61. We also estimate equation (2) using each of the five questions as dependent variables, and these results can be found in Appendix B to this report.

62. Given the relatively small sample size, a comparison of the adjusted R2 is preferred; here we see the value is 0.11 in column 1, and 0.22 in column 2. This means ideology by itself explains twice as much of the variation in support from Prop. 23 as do socio-economic and demographic variables by themselves.

63. Technically, because we have included county fixed-effects, this would be true for a Republican in Alameda County, which is the county for which we have excluded the county fixed effect. To prevent the statistical problem of prefect multicollinearity, one county fixed effect must be exclucded from each regression. In the models presented here and every fixed-effect model in this report we choose to exclude Alameda, simply because it is the first county when counties are listed in alphabetical order.

64. These results hold up to heteroskedastic-robust standard errors, both with and without county fixed effects.

65. The natural log of 80 (the maximum distance to downtown assigned to a block group) is 4.4 (technically, ln(80)=4.38).

66. Note that lnDISTANCE ranges from 0 to 4.4., and so when we find that *d*PCT_23_Y/*d*HOMEOWN = ((0.0141 × lnDISTANCE) - 0.0410), it is quite a large effect.

67. Both tables present full results of the unrestricted model, unlike Table 12 and Table 14 that, to conserve space, do not report estimates for all socio-economic and demographic variables.

68. See Gerber et al. (2001) who discusses the effect of this proposition passing on transit infrastructure. Elisabeth R. Gerber, Arthur Lupia, Mathew D. McCubbins, and D. Roderick Kiewiet, *Stealing the Initiative: How State Government Responds to Direct Democracy* (Upper Saddle River, NJ: Prentice Hall, 2001).

69. California Voter Foundation, “#181 Passenger Rail And Clean Air Bond Act of 1994,” http://www.calvoter.org/archive/94general/props/181.html (Accessed March 10, 2013).

70. The results we report here for Prop. 181 are very similar to those from an identical analysis of Prop. 156 (from 1992), which we do not report.

71. We do not include a table of variable descriptions as we did for the previous case studies, as the variables are coded in nearly identical ways. For example, the income categories are coded as fraction of the block group with income between zero and 25,000, between 25,000 and 50,000, and so on. All other variables definitions are as above, although we did not obtain unemployment data for this analysis.

72. Future work could analyze data from all of these surveys; combining the surveys would have the advantage of multiplying the number of observations and lowering the standard errors of the estimates.

73. We do not have voting data for Prop. 42 because when we accessed the SWDB it did not provide data for this proposition in the same format as for the other 15 propositions for which we analyze voting data.

74. For the 2002 file, we first matched each county to a 1994 MSA, and then used 2000 ZCTA Gazetteer files to determine population, land area, and geocode. Note the area used is reported in square miles, and land area does not account for development potential, water areas, or other factors. United States Census Bureau, "U.S. Gazetteer: 2010, 2000, and 1990," http://www.census.gov/geo/maps-data/data/gazetteer.html (Accessed March 10, 2013).

75. In addition to the 2010 PPIC survey, we were able to analyze two other surveys with zip code identifiers and questions resembling transit propositions in preparation of writing this report. A Field Poll survey, the fourth conducted in 1994, contained questions about attitudes towards gas taxes and towards green taxes and fees (such as higher registration fees for low mileage vehicles), and seemed to us to reflect likely opinions on Prop. 185 from the same year. We analyzed these data and are willing to share our preliminary results with interested researchers, but we decided not to pursue analyzing these data in the present research project as the survey questions were not as tightly related to Prop. 185, as for example how the questions in the PPIC survey were clearly related to Prop. 23. Thus, we wanted to preserve this report's focus on ballot propositions, rather than shift the focus to attitudes towards green taxes and fees. Understanding attitudes towards environmentally friendly forms of taxation is an important area for future research. In addition to preliminary analysis of the 1994 Field Poll data, we took one additional step towards assessing the general area of determinates of support for green taxes and fees by analyzing the survey data collected by Dill, Agrawal and Nixon (2009) on attitudes among Californians in 2008. In this analysis we found results consistent with the broad findings in this report concerning urban form; living farther from the center reduces support for green taxes. These results are more preliminary than the rest we report (i.e., the data we analyzed are more likely to contain coding errors or specification errors.) Despite this, it may be worthwhile to report here that, regarding the results of analysis of the 1994 Field Poll survey data on attitudes towards green taxes and fees, the results, interestingly, showed the same unexpected sign on lnDENSITY that we find in analysis of Prop.

185 using voting data. We return to this point when discussing Prop. 185, towards the end of this report.

76. Though, as suggested above, Prop. 111 had costs that were focused on those who drive more, it also had *benefits* that were focused on those who drive more, and so this, perhaps, would not have been the ideal proposition with which to test our hypotheses, as our hypotheses are relevant for propositions where the *net* benefits vary spatially.

77. Although we have little basis for this prediction, it would be interesting to investigate whether Prop. 125 failed in part because it was decided in the November election (and November elections have higher turnout), whereas Props. 108, 111 and 116 passed because they took place in the March election.

78. Prop. 157 had to do with the management of toll roads. We did not find any compelling theoretical reasons why urban form, ideology, or our other variables would be strongly related to support for this proposition.

79. The following quote alludes to both the (special interest) controversy we mention in the text, as well as another idiosyncrasy regarding the 1994 election, namely a surge in fiscal conservative sentiment: “Voters were not in the mood to spend anything. Despite the efforts of the Planning and Conservation League, which sponsored Proposition 185, and Southern Pacific Railroad, which supported it financially up until the last few weeks of the campaign, voters were not convinced that a high-speed railway between Los Angeles and San Francisco would be worth an extra 4 percent tax on gasoline. It was defeated resoundingly, which was no surprise since it had been lagging in the polls for weeks. In fact, in mid-October, the chairman of Southern Pacific issued a letter stating that the company was aware of the measure’s sinking popularity and would no longer be giving money to the campaign. They had already given nearly $500,000 and stood to reap more than $600 million if it had passed. Opponents accused the Planning and Conservation League of tailoring the measure to suit a special interest. Although PCL denied the charge, the damage was already done. Even without special-interest rumors, it is doubtful that the measure would have passed; the last thing anyone wanted to propose in 1994 was a tax increase.” Kirsten Mangold, “Propostions 181 and 185,” *California Journal* (December 1994): 20-24. http://www.unz.org/Pub/CalJournal-1994dec-00020a02?View=PDF&apages=0022 (Accessed March 10, 2013).

80. The positive coefficient on lnDENSITY for Prop. 1A (from 2006) is, however, inconsistent with the hypothesis of spatially varying net benefits, and we encounter similar findings above with Props. 7 and 185.

81. See Appendix C for the source of this quote.

82. The recent book by urban economist Edward Glaeser (2011) makes many of these same recommendations. Edward L. Glaeser, *Triumph of the City* (New York: Penguin Press, 2011).

83. Egon Terplan and Heng Gao, “Getting High-Speed Rail On Track.” *The Urbanist* 515 (2012), http://www.spur.org/publications/library/article/getting-high-speed-rail-track (Accessed March 10, 2013).

84. We would caution policy makers that the cap and trade money may not be as high as expected. It may be found that after businesses start paying for GHG emissions, to remain profitable, their overall tax burden will need to be reduced closer to its pre-cap-and-trade levels, in which case, permit sales revenue may be needed to bolster the general fund. We strongly support a tax system that includes carbon pricing, but for California’s GHG mitigation legislation to be successful, it is critical to keep a focus on the economy, at least if by successful one means that other states will follow the lead of California.

85. U.S. Census Bureau, “TIGER/Line® Shapefiles and TIGER/Line® Files,” http://www.census.gov/geo/maps-data/data/tiger-line.html (Accessed March 10, 2013).

86. The 1990 and 2000 Shapefiles for census block groups were obtained from ESRI, “ArcData,” http://arcdata.esri.com/data/tiger2000/tiger_download.cfm (Accessed March 10, 2013).

87. U.S. Census Bureau, “Census Block Relationship Files,” http://www.census.gov/geo/www/relate/rel_blk.html (Accessed March 10, 2013).

88. The 2010 Shapefiles for census block groups were obtained from the Census, U.S. Census Bureau, “2010 Census TIGER/Line® Shapefiles,” http://www.census.gov/geo/www/tiger/tgrshp2010/tgrshp2010.html (Accessed March 10, 2013).

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