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ABSTRACT

We study how Elon Musk's polarizing and partisan actions have impacted Tesla vehicle sales in the United States. Using county-level, monthly data on new vehicle registrations, we leverage how changes in vehicle sales over time diverge across counties with differing shares of Democratic and Republican voters. Without the Musk partisan effect, Tesla sales between October 2022 and April 2025 would have been 67-83% higher, equivalent to 1-1.26 million more vehicles. Musk's partisan activities also increased the sales of other automakers' electric and hybrid vehicles 17-22% because of substitution, and undermined California's progress in meeting its zero-emissions vehicle target.

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"Republicans buy sneakers, too." — Michael Jordan[1]

1 Introduction

In 2020, Tesla was the fastest-growing automaker in the United States, shaking the auto industry's status quo (White, 2025). By July 2025, Tesla was looking at a second consecutive year of falling sales. This decline took place even though overall electric vehicle (EV) sales grew 7% in 2024, 1.5% in the first half of 2025, and several automakers were rapidly expanding EV sales (Cox Automotive, 2025a,b). Numerous factors might have contributed to this dramatic reversal, including a lack of new Tesla models, increased EV competition from legacy automakers and new entrants, and a reliance on a flow of new EV customers rather than satisfying pent-up demand from early EV adopters.

We focus in this paper on another factor: the influence of Tesla's CEO, Elon Musk. As evidenced by bumper stickers—"I bought this car before I knew Elon was crazy"—it appears that some car buyers were displeased by Musk's actions starting with his purchase of Twitter in mid-2022 (Peyser, 2024). These actions included mass layoffs and relaxed content moderating of far-right and extremist voices. For many, the negative perceptions were exacerbated further by Musk's overtly partisan activities in the 2024 election (including $300 million in campaign contributions to Republican candidates) and his subsequent actions as the de facto head of the Trump administration's Department of Government Efficiency (DOGE). Elon Musk violated Michael Jordan's dictum of political neutrality, but even more dramatically, Musk's actions antagonized his most loyal customer base, for, as we show, Democrats are far more likely than Republicans to purchase a Tesla.

We estimate the effect of Elon Musk's increasingly polarizing and partisan actions on Tesla vehicle sales in the United States. We use detailed county-level microdata on new monthly vehicle registrations of all EVs and hybrids from March 2020 to April 2025. Our core empirical challenge is to disentangle the effect of Musk's political actions from other factors that influenced Tesla vehicle sales. We therefore begin with a simple conceptual model to provide a micro-foundation for our empirical analysis and to clarify key identification assumptions. The model considers how the propensity to purchase a Tesla (or another type of vehicle) might differ between Democrats and Republicans, and how these preferences might change over time due to market-based factors and to a potential Elon Musk partisan effect.

We proceed in our empirics with a difference-in-differences (DiD) analysis that exploits how county-level changes in vehicle sales over time differ among counties based on differences in their share of Democratic or Republican voters. We find clear evidence of a change in the trend around October 2022, when Musk's Twitter acquisition was finalized. More Democratic counties begin

[1]Michael Jordan made this remark when explaining his decision not to endorse Harvey Gantt, the 1990 Democrat candidate for Senate in North Carolina.

shifting away from Tesla purchases and toward the purchase of other electric and hybrid vehicles. Despite the clear pattern distinguishing a pre- and post-treatment period—which differs qualitatively between Tesla and other likely substitute vehicles—we also find that the parallel trends assumption needed to quantify the magnitude of the Musk effect is not satisfied. Specifically, we find that more Democratic counties showed an increasing propensity to purchase Teslas over time prior to October 2022, perhaps because of environmental concerns and greater awareness about Tesla. However, this trend reverses after October 2022.

We then consider two other empirical strategies. The first approach is motivated by the pattern of results in the initial DiD analysis. We find that the time trend on differences between counties based on political orientation is quite linear, so we estimate a linear DiD specification with a trend break in October 2022. This simple and intuitive approach leverages clear trends in the period before and after October 2022 and provides one way to quantify the Musk effect on Tesla sales. When applied analogously to other EVs and hybrid vehicles, it also enables estimation of how the Musk effect induces switching from Teslas to likely substitute vehicles. Indeed, using this approach, we find strong evidence of nearly one-for-one substitution to all other electric and hybrid vehicles.

Our final empirical strategy is a triple DiD analysis that leverages differences in county-level sales of Teslas and other electric and hybrid vehicles. This approach relies on an assumption about the substitution between Teslas and other electric and hybrid vehicles. We assume this substitution to be one-for-one because it is consistent with the linear DiD results and because it provides the most conservative estimate of the Musk effect. An advantage of the triple DiD approach, compared to the initial DiD analysis, is that the key identification assumption is weaker and therefore easier to satisfy. In this case, identification requires that market-based preferences (unrelated to the Musk partisan effect) are changing over time between Teslas and substitute vehicles in the same way for Democrats and Republicans. Indeed, we find support for this assumption of parallel trends in counties across the political spectrum prior to October 2022, and this enables quantification of the Musk effect on vehicle sales.

Our primary result is that Elon Musk's polarizing and partisan actions had a dramatic effect on Tesla sales, and this effect grows over time starting in October 2022. The results are remarkably similar between the linear and triple DiD analyses, despite the fact that both approaches rely on different identification strategies. By the first quarter of 2025, we find that without the Musk partisan effect, Tesla monthly sales would have been about 150 percent higher. When the effect is aggregated over the entire period from October 2022 through April 2025, we find that Tesla lost between 1 and 1.26 million vehicles in sales, amounts equal to between 67% and 83% of the actual number of Teslas sold over the same period. What is more, the Musk partisan effect increased the vehicle sales of competitors. In the first quarter of 2025, we find that without the Musk partisan effect, monthly sales of other electric and hybrid vehicles would have been around 25% lower, and when aggregated back to October 2022, Musk's partisan activities increased sales of EV and hybrid competitors by between 17% and 22%.

Our findings relate to an economic literature on the ability of CEOs to influence corporate performance. Much of this literature focuses on CEO pay, a topic of interest to economists since at least Gordon (1940). For example, Bandiera et al. (2020) explore the difference between two types of CEOs, leaders and managers, and provide evidence indicating that firms that hire leaders perform better. Our work is quite different in providing a clear example of very significant adverse impacts on corporate performance due to the social and political decisions by one of the world's best-known CEOs. Chatterji and Toffel (2019) refer to such activity as 'CEO activism.' While existing studies in the management literature evaluate the effect of CEO activism using surveys, experiments, and indirect measures of consumer intentions (Mikeska and Harvey, 2015; Panagopoulos et al., 2020; Hou and Poliquin, 2023), we focus directly on market sales. We also focus on the case of the world's wealthiest person and CEO of the world's most valuable automaker by market capitalization.

This paper further contributes to a rapidly growing literature on the market for EVs. There is work on EV subsidies and tax credits (Linn, 2022; Allcott et al., 2024; Bigler and Radulescu, 2025; Ji et al., 2025; Sheldon, 2022), product attributes and subsidy design (Remmy et al., 2025), EVs and electricity markets (Heid et al., 2024; Gillingham et al., 2025), consumer acceptance of EVs (Gillingham et al., 2023), the dramatic growth of EVs in China (Bai et al., 2020; Barwick et al., 2024), and learning-by-doing lowering EV battery costs (Barwick et al., 2025). Davis et al. (2025) use county-level data through 2023 to show that roughly half of new EV registrations were in the 10% most Democratic counties, a correlation that remains stable over time. Our study is distinct in quantifying the impact of Musk's "extracurricular" activities on Tesla's EV sales. In related work, Liu et al. (2025) examine determinants of Tesla's market share in several states between 2020 and 2024. They regress Tesla's market share on a variety of factors, including a news-based "image score" of Tesla and Elon Musk, finding that the image score is positively associated with Tesla's market share. Finally, Flores et al. (2025) use survey data to examine how personal perceptions of Elon Musk affect stated intentions to purchase a Tesla, finding that Musk's public persona over the last two years has significantly reduced liberal and Democratic support for Tesla without increasing conservative and Republican support.

Our results also have implications for policy. Many states have ambitious targets for increasing the market share of EVs. For example, California has stated targets to reach 68% market share of zero-emission vehicles (ZEV) by 2030, and 100% by 2035, where ZEVs are defined as plug-in EVs, with up to 20% possible to be plug-in hybrids. To reach these goals, California implemented a ZEV standard requiring automakers to sell enough ZEVs; however, California is not on track to reach its 2026 target of 35% ZEV market share. We perform an additional analysis focused on the Musk partisan effect in California that includes the possibility of substitution to other potentially qualifying ZEVs. We find that California would have been on track to meet its 2026 target had it not been for the Musk partisan effect.

2 Data and descriptives

Our primary data source is S&P Global (formerly R.L. Polk), which provided monthly new vehicle registration data from the beginning of 2018 through the end of April 2025 on all EVs, plug-in hybrids, and conventional hybrids in the United States. These data include county-level counts of each vehicle combination of make, model, model year, trim, and fuel type. State Department of Motor Vehicle (DMV) offices provide the original data from which S&P Global aggregates. We also use data from two other sources. To measure the political orientation of each county, we use data on the total number of votes for the Democratic and Republican presidential candidates in 2020 and 2024.[2] We then take the average of the Democratic share of votes between the two election years to characterize the political orientation of counties. We ignore the relatively small number of votes for other parties, so the Democratic share can range between 0 and 1. We also obtain data from the U.S. Census on the total number of light duty vehicles registered in 2023 for each county.[3]

Until mid-2022, new Tesla registrations in the United States were generally increasing and following trends similar to hybrids and other EVs (Panel A of Figure 1). After mid-2022, however, Tesla sales leveled off, while sales of hybrids, other EVs, and plug-in hybrids continued an upward trend.[4] This first look at the data suggests that something different was happening with Tesla compared to other likely substitute vehicles, but of course, it does not provide evidence that Elon Musk's public and political profile played a role.

We next consider where Tesla purchases are occurring and how they are aligned with the political orientation of counties. We find considerable cross-sectional variation in the cumulative number of new Tesla registrations per 10,000 vehicles in a county (Appendix Figure A.2).[5] More important to our research design, however, is the way that the propensity to purchase a Tesla differs based on the share of Democratic or Republican voters in a county, and how this difference changes over time. To help motivate our analysis, Panel B of Figure 1 shows new Tesla registrations per 10,000 registered vehicles by month, by quintiles of counties based on the Democratic share of voters. We find that the more Democratic-leaning counties have greater Tesla sales per registered vehicle over the entire time period. Further, the quintiles of counties differ in how their propensity to purchase a Tesla changed over time. The more Republican-leaning counties show a slow but increasing trend in Tesla sales over the entire sample period, whereas the more Democratic-leaning counties have a more steeply increasing trend until mid to late 2022, when Tesla sales level off and even begin to drop in the highest quintile.

[2]These data were obtained from the National Neighborhood Data Archive and are available at https://www.icpsr.umich.edu/sites/icpsr/find-data. The only exception is for counties in Connecticut, where voting precinct data were individually aggregated to match a change in county designations between elections.

[3]These data were obtained from variable B25046 of the American Community Survey.

[4]Figure A.1 in the Appendix shows the registrations of different Tesla models over time, indicating that the leveling off of Tesla sales holds for all models after an initial jump in Model Y registrations when it became more available in early 2023.

[5]We report purchases per 10,000 vehicles in a county (taken from the Census data) rather than per capita to account for the way that the number of potential vehicle purchases will differ substantially from population numbers between urban and rural counties.

Might shifting public opinion about Elon Musk be the cause of Tesla sales leveling off and of differences between Democratic- and Republican-leaning counties? This is a question that we address more formally in our subsequent empirical analysis, yet we note here there is ample evidence to suggest that public opinion about Elon Musk began to shift around the time he completed the purchase of Twitter in October 2022, and these opinions differ substantially between Democrats and Republicans. For example, a sequence of NBC polls shows that more respondents held a positive view of Elon Musk than a negative view in 2021, but the ordering switched in November 2022 and the downward trend continued in successive polls into 2025 (NBC News Survey, 2025). As for partisan differences, the results are striking. NBC polls show that between August 2021 and March 2025, the number of Democrats holding a negative view of Elon Musk increased steadily from 28% to 92%, while those holding a positive view decreased from 21% to 4%. For Republicans over the same period, the number holding a positive view increased from 30% to 75%, while those holding a negative view decreased from 17% to 11%. We note that the March 2025 wave of the NBC poll took place well after Musk took an active role in Donald Trump's presidential campaign and was in the midst of leading the Trump administration's controversial DOGE.

3 Econometric analysis

A key feature of our empirical strategy is to focus on how the propensity to purchase a Tesla has changed over time between Democrats and Republicans. We begin with a simple conceptual model to provide a micro-foundation for our econometric analysis and to clarify key identification assumptions. We then use the county-level data to examine the way that Democrats and Republicans have differentially changed their vehicle purchasing behavior over time, focusing on differences in the periods before and after Musk's purchase of Twitter.

3.1 A simple conceptual model

We assume two types of individuals, Democrats, D, and Republicans, R.[6] The probability that an individual of either type purchases a Tesla in month t is given by

$$p_t^k = \phi_t^k + \varphi_t^k \text{ for } k = D, R. \tag{1}$$

The first term ϕ_t^k captures market-based preferences about Teslas compared to other vehicles, while the second term φ_t^k captures a potential Musk-induced partisan effect. To fix ideas, if a Democrat is more likely to purchase a Tesla than a Republican because of, say, environmental concerns, we would have $\phi_t^D > \phi_t^R$. This, however, has nothing to do with Musk's political activities. If Musk's

[6] In the previous section, we describe how we use presidential voting shares to characterize the political orientation of counties. We therefore ignore the relatively small number of independent and third party votes. For purposes of the conceptual model, voters that identify as independents or third party supporters can be categorized with the closest party to their ideology or the party to which they cast a vote in recent presidential elections.

political activities cause a Democrat to be less likely than a Republican to purchase a Tesla, then $\varphi_t^D < \varphi_t^R$.

We delineate pre- and post-treatment periods at the end of October 2022, the month when Elon Musk completed the purchase of Twitter. This assumption is motivated by the way that, as discussed previously, Musk's partisanship only became salient after his Twitter purchase, when we might expect to begin seeing Musk-induced changes in Tesla preferences that differ by political party. The implication of this assumption is that $\varphi_t^k = 0$ for both Democrats and Republicans prior to and including October 2022, but it need not be thereafter. Indeed, testing for how this preference parameter changes differently between political parties after October 2022 is central to our analysis. Using October 2022 as our base month for comparisons, we define $\Delta p_t^k = \Delta\phi_t^k + \Delta\varphi_t^k$ for $k = D, R$ as the difference between the probability of a Tesla purchase between any month t and October 2022, the latter of which we denote as period $t = 0$.

Tesla purchases per capita in county i and period t (which as described above we define as per 10,000 vehicles) can be written as

$$Y_{it} = p_t^D Dshare_i + p_t^R(1 - Dshare_i) + \nu_{it}, \tag{2}$$

where $Dshare_i$ is the Democratic share of voters in county i, and ν_{it} is a term that captures non-partisan heterogeneity in Tesla adoption across counties and time periods, including possible supply-side constraints, the number of installed chargers, or other policies that might affect Tesla purchases. The long difference in Tesla sales between period 0 and t can then be written as

$$\Delta Y_{it} = Y_{it} - Y_{i0} = (\Delta p_t^D - \Delta p_t^R) Dshare_i + \Delta p_t^R + \Delta\nu_{it}, \tag{3}$$

where across terms Δ refers to the difference from period 0 to t. Then, the difference in the difference between counties i and j would be

$$\Delta Y_{it} - \Delta Y_{jt} = (\Delta p_t^D - \Delta p_t^R)(Dshare_i - Dshare_j) + \Delta\nu_{it} - \Delta\nu_{jt}. \tag{4}$$

Finally, substituting in (1) and assuming $Dshare$ varies continuously across counties, we have

$$\frac{\partial \Delta Y_t}{\partial Dshare} = \left(\Delta\phi_t^D - \Delta\phi_t^R\right) + \left(\Delta\varphi_t^D - \Delta\varphi_t^R\right), \tag{5}$$

where the second term applies only in post-treatment months after October 2022. In what follows, we seek to estimate the second term, which represents the Musk-induced partisan difference in the likelihood of a Tesla purchase between Democrats and Republicans.

3.2 A difference-in-differences analysis

A DiD analysis is a natural place to begin testing for differences in the Musk effect on Democrats and Republicans beginning in October 2022. We examine whether Tesla sales began changing differently over time across counties based on differences in the share of Democrats after Elon Musk became an increasingly polarizing and partisan figure. We run our econometric analysis using data going back March 2020, when Tesla's Model Y first entered the market.

In line with our conceptual framework, we use a DiD event study model of the form

$$Y_{it} = \sum_{t \neq \text{Oct'22}} \beta_t \left(Dshare_i \times month_t \right) + \eta_i + \mu_{st} + \varepsilon_{it}, \tag{6}$$

where Y_{it} is the number of new Tesla registrations per 10,000 registered vehicles in county i and month t. The term $month_t$ is an indicator variable for each month of sample (omitting October 2022), each of which is interacted with the share of Democratic voters in each county. We capture further factors that affect Tesla sales through a set of county fixed effects, η_i, month-of-sample by state fixed effects, μ_{st}, and an idiosyncratic error term, ε_{it}.

The set of β_t coefficients quantify how Tesla sales differ across counties over time based on the share of Democratic voters after conditioning on county fixed effects and state-specific time trends. Linking specification (6) to equation (5), it follows that the estimated coefficients capture differences between Democrats and Republicans based on the sum of changing market-based preferences $\left(\Delta\phi_t^D - \Delta\phi_t^R\right)$ and the Musk-partisan effect $\left(\Delta\varphi_t^D - \Delta\varphi_t^R\right)$, where the latter applies only in the post-treatment period. But the causal effect of interest is only the second term, $\Delta\varphi_t^D - \Delta\varphi_t^R$. A further assumption is therefore necessary to identify this effect. A parallel trends assumption would be sufficient for this purpose—that is, $\Delta\phi_{it}^D - \Delta\phi_{it}^R = 0$ for all i counties in state s and periods t. Such an assumption requires that market based-preferences for D and R types in the same state change in the same way over time.[7] However, this assumption is quite restrictive, as we discuss below, and so rather than simply make the assumption at the outset, we estimate the model and examine whether it plausibly holds in the pre-treatment period.

Panel A of Figure 2 reports estimates of the coefficients in equation (6) based on a model where counties are included only if they had at least one Tesla purchase after March 2020, and the standard errors are clustered at the county level to account for potential within-county correlations over time.[8] There are two key messages from Panel A of Figure 2. The first speaks to the empirical validity of the parallel trends assumption: D and R individuals are clearly not following

[7] We note that if this assumption were to hold, it would imply the strong parallel trends assumption that has been shown to be important in DiD designs with continuous treatment effects (de Chaisemartin and D'Haultfœuille, 2020; Callaway et al., 2024). In our setting, the strong parallel trends assumption means that the untreated outcome paths on Tesla purchases would not differ across counties based on the Democratic share of voters.

[8] The model and all others reported in the paper are estimated using inverse variance weights based on the total stock of vehicles in the county. The weights account for the way that observations with more underlying units are more precise and therefore given more weight. Use of the total stock of vehicles captures heterogeneity in the size of the potential vehicle market across counties.

a parallel trend with respect to Tesla purchases prior to Musk's purchase of Twitter in October 2022, which is denoted with red vertical line. Were they following a parallel trend, the estimates to the left of the red line would be roughly constant (a flat line) at zero. Instead, the upward trend implies that during the pre-treatment period, when the Musk partisan effect had yet to occur, Democrats have a preference for purchasing Teslas that is increasing relative to Republicans. A likely explanation is that more environmentally-oriented Democrats are purchasing EVs, including Teslas, at an increasing rate relative to Republicans in the pre-treatment period.[9] This result is similar to the pattern in the raw data observed in Panel B of Figure 1. A consequence is that while the pre-treatment coefficients provide insight into the changing relative attractiveness of Teslas to Democrats compared to Republicans, they also imply that we cannot interpret the magnitude of the coefficients in the post-treatment period as reflecting the causal effect of a Musk partisan effect on Tesla sales.[10]

The second key message from Panel A of Figure 2 is that something clearly is different between the pre- and post-treatment periods. While the pattern of coefficients is increasing prior to Musk's purchase of Twitter, the direction turns negative soon thereafter. This suggests that while Democrats appear to be shifting towards Tesla purchases more than Republicans prior to October 2022, the pattern then reverses, and Democrats begin shifting away from Tesla purchases more than Republicans. Hence, while we cannot interpret the *magnitude* of the post-treatment coefficients as a causal effect of Musk's partisan activities on Tesla sales, the pattern of results indicates a causal effect on the direction of change in the relative preferences between Democrats and Republicans after Musk acquired Twitter. Importantly, we note that our identifying assumptions so far do not rule out non-Musk related factors leading to the reduced Tesla sales we observe in the raw data, and our conclusion about a causal effect on the change in relative preferences holds as long as any non-Musk related factors affect Democrats and Republicans in the same way.

One might wonder whether the pattern just described is unique to Tesla, or whether it might apply to other EVs and hybrid vehicles (a group we refer to together as 'other EVs + hybrids'). To examine this, we report the results in Panel B of Figure 2 of an analogous model where the dependent variable is the number of new registrations for other EVs + hybrids (including plug-ins) per 10,000 vehicles.[11] It is important to emphasize, however, that these results are not intended as a placebo test, as any Musk-induced decline in Tesla sales is very likely to increase the sales of other EVs + hybrids, the likely class of substitute vehicles. Indeed, we examine precisely this substitution effect below. The analysis here is useful for exploring the possibility of a similar trend

[9] Davis et al. (2025) focus on *all* EVs and show a consistent pattern from 2012 to 2023 that about half of EV registrations went to the most Democratic counties; our result focuses on the *relative* purchases by Democrats and Republicans for only Teslas from 2022 to 2025.

[10] To be clear, if the parallel trends assumption did hold, each β_t in the post-treatment period would reflect the Musk-induced partisan difference in Tesla sales (per 10,000 vehicles) between a hypothetical 100% D county and a 100% R county.

[11] The conceptual model in Section 3.1 of how Tesla purchases might differ across counties based on the Democratic share of voters can be developed analogously for other EVs + hybrids, and hence motivate this analysis in the same way.

reversal. We find no such evidence of a directional change. In fact, there appears to be an increase in the upward trend after October 2022, consistent with a Musk-induced substitution away from Tesla and toward other EVs + hybrids. We interpret the contrast between the panels in Figure 2 as further evidence that Democrats began to increasingly shift away from Tesla relative to Republicans after Musk purchased Twitter.

3.3 A linear model

The seemingly linear trends in the pre- and post-treatment periods in Figure 2 suggest an intriguing possibility for forecasting the post-treatment counterfactual without a Musk partisan effect. What if we assume a linear model in which the pre-treatment trend continues into the post-treatment period? Although potentially more questionable as we move further into the post-treatment period, the approach is intuitive and has further advantages that we describe below about estimating the degree of Musk-induced substitution from Tesla to other EVs + hybrids.

Thus, we estimate a linear spline model of the form

$$Y_{it} = \gamma\left(trend_t \times Dshare_i\right) + \delta\left((trend_t - z) \times Dshare_i\right) + \eta_i + \mu_{st} + \epsilon_{it}, \tag{7}$$

where $trend_t$ in a month-of-sample time trend (i.e., the count of periods after the first), and z is a spline knot defined at the period corresponding with October 2022. This implies that $trend_t - z = 0$ if $trend_t \leq z$. The coefficient γ quantifies the slope of the linear trend for the difference between D and R market-based preferences in the pre-treatment period. $\gamma + \delta$ quantifies the linear trend of the same difference during the post-treatment period. The coefficient of primary interest is δ, which captures how the trends in the relative preferences of Democrats and Republicans change between the pre- and post-treatment periods. The model is otherwise identical to the DiD approach described above.

In the context of our conceptual framework, $\delta(trend_t - z)$ provides an estimate of $\Delta\varphi_t^D - \Delta\varphi_t^R$, as it captures the difference in the difference between Democratic and Republican propensities to purchase a Tesla in each post-treatment period. This is useful for three reasons. First, conditional on the linear model, it is an estimate of the Musk-induced partisan effect in each post-treatment period. Second, by estimating (7) separately for Tesla and for other EVs + hybrids, we can derive an estimate of the Musk-induced substitution effect from Teslas to other EVs + hybrids. Finally, it will be used subsequently to estimate counterfactual sales.

The first column of Table 1 reports the estimated coefficients for the model with Tesla sales. To interpret the coefficients, it is helpful to make comparisons between a hypothetical 100% D county and a 100% R county. The estimate of γ implies that in the pre-treatment period, Tesla purchases (per 10,000 vehicles) are increasing in the 100% D county compared to the 100% R county at a rate of approximately 0.15 vehicles per month.[12] The sign reverses, however, in the post-treatment

[12]This implies 0.15 in the first month, 0.30 in the second month, 0.45 in the third month, etc.

period, which is based on $\gamma+\delta$. In the post-treatment period, the rate is declining at approximately 0.05 Teslas per month. The difference, $\delta \approx -0.2$, can be attributed to the Musk-induced partisan effect. With this approach, we find a Musk partisan effect beginning in October 2022 such that Tesla purchases (per 10,000 vehicles) are decreasing in the 100% D county compared to the 100% R county at a rate of about 0.2 fewer vehicles per month on average. It follows that the estimate for any particular county would be scaled by the share of Democratic voters, such that the estimated rate of change is approximately $-0.2 \times Dshare_i$ Teslas per month.

The second column of Table 1 reports results for the model with other EVs + hybrid sales as the dependent variable. Not surprising, in light of Panel B in Figure 2, is that both the pre- and post-treatment trends are positive, with the latter having a higher magnitude. Following the same logic as above, the estimate of δ captures the Musk-induced partisan effect on purchases of other EVs + hybrids. We find that beginning in October 2022, other EVs + hybrid purchases (per 10,000 vehicles) are increasing in the 100% D county compared to the 100% R county at a rate of about 0.2 additional vehicles per month. This result is striking because the absolute value of its magnitude is nearly identical to the rate of decline in Tesla sales. Indeed, the ratio of the monthly increase in other EVs + hybrid sales to the decrease in Tesla sales is $-\frac{0.191}{0.195} \approx -0.98$. This is consistent with a Musk-induced substitution effect of nearly one-for-one from Teslas to other EVs + hybrids. We take advantage of this result as part of a triple DiD analysis.

3.4 A triple DiD analysis

We now turn to a triple DiD analysis that continues to compare differences in vehicle sales between the pre- and post-treatment periods and between counties that differ by the Democratic share of voters. What differs is that the triple DiD approach simultaneously leverages differences in sales between Teslas and other EVs + hybrids, which is possible after accounting for possible substitution between the two.

As noted previously, the conceptual framework developed in Section 3.1 for Teslas can be developed analogously for other EVs + hybrids. We use the following notation (with a tilde) to denote the probability that an individual purchases a vehicle within the group of other EVs + hybrids: $\tilde{p}_{it}^k = \tilde{\phi}_{it}^k + \tilde{\varphi}_{it}^k$ for $k = D, R$. All aspects of the setup apply to this group of vehicles in parallel to the way they apply to Teslas.

With the triple DiD approach, our estimating equation is identical to that in (6) other than the dependent variable. It is now the monthly difference between the number of Tesla sales and the number of other EV + hybrid sales per 10,000 registered vehicles in county i and period t. In this case, it is a straightforward generalization of equation (5) to see that the coefficients of interest (the β_ts) now capture the sum of two effects. The first is the difference in the difference between market-based preferences: $(\Delta\phi_t^D - \Delta\phi_t^R) - (\Delta\tilde{\phi}_t^D - \Delta\tilde{\phi}_t^R)$. The second is the difference in the difference between the Musk-induced partisan effect: $(\Delta\varphi_t^D - \Delta\varphi_t^R) - (\Delta\tilde{\varphi}_t^D - \Delta\tilde{\varphi}_t^R)$.

The first of these effects isolates what can be thought of as the standard parallel trends assump-

tion for triple DiD analysis, where identification requires the term to equal zero. In our setting, we only need market-based preferences (not including the Musk partisan effect) to be shifting between between Democrats and Republicans in the same way between Teslas and other EVs + hybrids in counties within the same state. This condition is weaker than the identification assumption needed for the DiD analysis earlier. There we needed changes in market-based preferences for Teslas alone to be the same for Democrats and Republicans (i.e., $\Delta\phi_t^D - \Delta\phi_t^R = 0$), whereas here we need only the partisan difference in market-based preferences between groups of vehicles to be the same.[13] Assuming this condition holds, which we again evaluate based on results of the pre-treatment period, we are left with only the Musk partisan effect.

Pinning down the Musk partisan effect does require an additional assumption about the substitution from Teslas to other EVs + hybrids. We can parameterize the substitution effect by defining $\theta \equiv -\frac{\Delta\tilde{\varphi}_t^D - \Delta\tilde{\varphi}_t^R}{\Delta\varphi_t^D - \Delta\varphi_t^R}$. Under this definition, $\theta = 0$ implies no substitution, and $\theta = 1$ implies one-for-one substitution. Recall from the previous section that we found an estimate of $\theta \approx 0.98$. Using this estimate as the assumed substitution and assuming the parallel trends assumption holds, we can interpret our estimated $\hat{\beta}_t$ coefficients as providing estimates of $(\Delta\varphi_t^D - \Delta\varphi_t^R)(1+\theta)$, which explicitly accounts for the substitution. This means that the treatment effect of interest will have the magnitude $\frac{\beta_t}{1+\theta}$, which intuitively depends on the substitution parameter. With zero substitution, the β_t coefficients measure the treatment effect, but with full substitution, the coefficients measure twice the treatment effect, as Teslas and other EVs + hybrids both respond with the same magnitude but in opposite directions. In what follows, we assume one-for-one substitution because of our finding from above that $\theta = 0.98$ and because this provides the most conservative estimate of the Musk partisan effect.[14]

Panel A of Figure 3 displays the triple DiD estimates of the unadjusted β_t coefficients, where all other aspects of the estimation (e.g., weighting and clustering) remain the same as that described above. We find strong evidence in support of the parallel trends assumption in the pre-treatment period, especially over the year preceding Musk's purchase of Twitter, and this supports interpreting the magnitude of the post-treatment coefficients as capturing a causal effect. There is a clear decline in the magnitude of the coefficients that begins shortly after Musk completed the purchase of Twitter, and it continues over the whole sample period, with what appears to be an accelerated pace in the final months of 2024, when Musk became closely linked with the Trump campaign and administration.

Recall that the magnitude of the unadjusted coefficients capture the effect on both Teslas and other EVs + hybrids. Given our assumption of one-for-one substitution, with $\theta = 1$, the causal

[13] For example, as as discussed previously, it is easy to imagine that Democrats, perhaps for environmental reasons, were developing stronger preferences than Republicans for EVs, including Teslas, in the pre-treatment period. Indeed, this is what we find in the pre-treatment trends in Panel A of Figure 2. Less clear, however, is whether Democrats were developing stronger or weaker preferences for Tesla versus other EVs + hybrids during the same period *relative to Republicans*.

[14] We note that with alternative assumptions about the degree of substitution, one need only rescale the coefficient estimates, and the treatment effect is decreasing in the substitution parameter.

effects of interest are one-half the magnitude of those reported in Panel A of Figure 3. For example, a coefficient estimate of -10 in the post-treatment period is interpreted as follows: the Musk partisan effect caused a hypothetical 100% D county to purchase 10 fewer Teslas than other EVs + hybrids (per 10,000 vehicles) compared to a 100% R county. But because of the one-for-one substitution, the decrease in Tesla sales is equal to the increase in sales of other EVs + hybrids, so there is a decline in Tesla sales of five vehicles.

4 Counterfactual estimates

We now turn to deriving counterfactual estimates of vehicles sales—that is, we estimate what sales would have been in the post-treatment period without a Musk-induced partisan effect. We are interested in the effects on both Tesla and other EVs + hybrids.

To show how we derive counterfactual sales, we focus first on Tesla. Substituting (1) into (3), we can write the change in observed sales between period 0 and period t as

$$Y_{it} - Y_{i0} = \left(\Delta\phi_t^D - \Delta\phi_t^R + \Delta\varphi_t^D - \Delta\varphi_t^R\right) Dshare_i + \Delta\phi_t^R + \Delta\varphi_t^R + \Delta\nu_{it}. \tag{8}$$

The counterfactual without a Musk partisan effect is by definition a scenario where $\Delta\varphi_t^D = \Delta\varphi_t^R = 0$, so we can write the difference in sales between period 0 and the counterfactual in period t as

$$Y_{it}^{CF} - Y_{i0} = \left(\Delta\phi_t^D - \Delta\phi_t^R\right) Dshare_i + \Delta\phi_t^R + \Delta\nu_{it}. \tag{9}$$

Now subtracting (8) from (9) yields the difference between counterfactual and observed sales:

$$Y_{it}^{CF} - Y_{it} = -\left(\Delta\varphi_t^D - \Delta\varphi_t^R\right) Dshare_i - \Delta\varphi_t^R. \tag{10}$$

We have two different estimates of $\Delta\varphi_t^D - \Delta\varphi_t^R$ for all post-treatment periods from the linear and triple DiD models.[15] We do not, however, have separately identified estimates of $\Delta\varphi_t^R$, which characterizes the response by Republicans to Musk's partisan activities.

There are several reasons to believe the Republican response to Musk's partisan activities, $\Delta\varphi_t^R$, is likely to be small or near zero. First, surveys show that the political party affiliation of Tesla buyers is shifting to a greater share of Republicans, yet market analysts argue the shift is due to a decrease in Democratic purchases rather than an increase in Republican purchases, as the latter are far less interested in EVs more generally (Domonoske, 2025). Second, the fraction of Republicans

[15] Our estimates of $\Delta\varphi_t^D - \Delta\varphi_t^R$ are interpreted as the marginal effect of increasing the Democratic share of voters in a county. Our conceptual framework implies that the effect is linear, and we find no evidence of heterogeneous effects based on the level of $Dshare_i$ that would affect our estimates, and therefore counterfactuals, in any meaningful way. For example, Supplementary Table A.1 and Figure A.3 show the results of tests for heterogeneous effects between counties with $Dshare_i$ greater or less than .5 for the linear and triple DiD estimates, respectively. Under these conditions, along with strong parallel trends and no staggered treatment, Callaway et al. (2024) show that the two-way fixed effects estimator, which we use in the triple DiD analysis, provides valid estimates of the constant marginal effect of the treatment.

stating Musk is making them more likely to purchase a Tesla is very small, especially relative to the fraction of Democrats stating Musk is making them less likely (Meyer, 2025). And one survey, which we discuss more below, finds that even among Republican voters, the net effect of Elon Musk himself on the propensity to own or lease a Tesla is negative (YouGov, 2025). Third, Flores et al. (2025) specifically estimate how personal perceptions of Musk affect stated intentions to purchase a Tesla based on three surveys between May 2024 and March 2025. Across waves of the survey, they find that Musk's public persona significantly reduces liberal and Democratic support for Tesla without increasing conservative and Republican support.[16] Finally, we find suggestive evidence in our own data. Referring back to Panel B of Figure 1, we observe no increase in post-treatment sales in heavily leaning Republican counties that appears to differ from the pre-treatment trend. While it is possible that a Musk-induced Republican boost in Tesla sales is offsetting what otherwise would have been a decline in sales, this would run contrary to the other evidence and seems unlikely.

4.1 Primary counterfactual estimates

We first report counterfactual estimates based on the assumption that $\Delta\varphi_t^R = 0$. We then, in the next subsection, consider a sensitivity analysis showing the ways in which our results might be either under- or over-estimates of the Musk partisan effect, but the magnitudes in either case are likely quite small.

We begin with a comparison of the national observed and counterfactual sales based on the triple DiD analysis in Panel B of Figure 3. In this case, counterfactual sales are obtained for county i and post-treatment period t by subtracting from observed sales the product of $\frac{\beta_t}{2} \times Dshare_i$ and the number of vehicles in county i (measured in 10,000s). This implies that when $\beta_t < 0$, counterfactual sales—without the Musk partisan effect—are higher for Tesla. Also shown in the figure are the lower counterfactual sales for other EVs + hybrids, which depend analogously on the assumption that $\Delta\tilde{\varphi}_t^R = 0$.

Over the entire period from October 2022 through April 2025, we estimate that without the Musk partisan effect, Tesla sales would have been 1.255 million vehicles higher. This amounts to 83% of the actual number of Teslas sold over the same period. Because of the assumption of one-for-one substitution with the triple DiD estimates, we find that the Musk partisan effect also caused an increase of over 1.255 million sales of competitor vehicles, which amounts to 22% of the actual number other EVs + hybrids sold over the same period. We report analogous results on the counterfactual sales based on the linear model in Supplementary Figure A.4.[17] In this case,

[16] Flores et al. (2025) explain the pattern of results by drawing upon psychological research showing that individuals are more likely to reject something because of an aspect they dislike than they are to adopt something because of an aspect they like. In this case, the "dislikes" are the Musk-associated Tesla brand for Democrats and the environmentally friendly EVs for Republicans, and the "likes" for individuals of each political party are precisely the reverse.

[17] With the linear model, we obtain counterfactual sales by subtracting the product of $\delta \times (trend_t - z) \times Dshare_i$ and the number of vehicles in county i (measured in 10,000s) from the observed monthly sales in county i and post-treatment period t. The estimates of δ reported in Table 1 indicate higher counterfactual sales for Tesla and lower

we find lost Tesla sales of somewhat less at 1.024 million vehicles, equivalent to 67% of the actual number of Teslas sold. We separately estimate the increase in sales of other EVs + hybrids to be very similar at 1.002 million vehicles, which is equal to 17% of those actually sold.

We directly compare estimates based on the linear and triple DiD models in Figure 4 to illustrate robustness. The models rely on two entirely different identification strategies. The linear model assumes the pre-treatment difference between Democrats and Republicans continues into the post-treatment period. The triple DiD model does not assume linearity and uses differences between political parties with respect to differences in Tesla and other EV + hybrid purchases to pin down the counterfactual, yet the approach is based on the conservative assumption of one-for-one substitution. With both approaches, we find quite similar results for Tesla over the entire post-treatment period, reported in Figure 4 as the percentage difference between the counterfactual and observed sales. The Musk partisan effect is increasing over time, with estimates in the first quarter of 2025 pointing to monthly Tesla sales that would have been around 150 percent higher. With respect to other EVs + hybrids, the results are again similar between approaches, noting the difference in scales between panels of the figure. By the first quarter of 2025, we find that without the Musk partisan effect, sales of other EVs + hybrids would have been around 25% lower.

4.2 Sensitivity analysis

We now consider how our counterfactual estimates might differ if $\Delta\varphi_t^R \neq 0$, which would occur if there is an effect of Musk's partisan activity on Republicans. Relying on recent survey evidence, we undertake a "back of the envelope" sensitivity analysis to gauge the potential importance of such a Musk effect on Republicans. As noted above, we have estimates of $\Delta\varphi_t^D - \Delta\varphi_t^R$, which are negative, but we do not have estimates of each term separately. To get traction, we assume a constant, time-invariant relationship between the Musk-induced preference shifts between individuals of different parties that we denote as $\kappa \equiv \frac{\Delta\varphi_t^R}{\Delta\varphi_t^D}$, where it is reasonable to assume $\Delta\varphi_t^D < 0$, and our estimates imply $\kappa < 1$, though in theory κ can take either sign.

Assuming for the moment that we have an estimate of κ, we can gain further insight by taking the ratio of the counterfactual change in sales allowing for a Musk Republican effect (i.e., $\varphi_t^R = \kappa\varphi_t^D$) and the change in counterfactual sales shutting down this effect (i.e., $\varphi_t^R = 0$). This can be obtained by plugging in the respective values for φ_t^R in equation (10), and with some rearranging, we have:

$$\frac{[Y_{it}^{CF} - Y_{it}]\big|_{\Delta\varphi_t^R = \kappa\Delta\varphi_t^D}}{[Y_{it}^{CF} - Y_{it}]\big|_{\Delta\varphi_t^R = 0}} = 1 - \frac{\kappa(Dshare_i - 1)}{Dshare_i}. \tag{11}$$

This expression provides intuition for how the Musk Republican effect could influence our counterfactual sales result. Specifically, the second term on the right-hand side captures the proportional bias in the difference between counterfactual and observed Tesla sales because of our assumption

sales for other EVs + hybrids.

that $\Delta\varphi_t^R = 0$. Intuitively, if $\kappa = 0$ or $Dshare_i = 1$, there is no bias. The expression also shows how our previous results provide an over- or under-estimate estimate of the Musk partisan effect on lost Tesla sales if κ is less than or greater than zero, respectively. A further observation is that because the right-hand side of (11) does not change with t, the second term measures the overall proportional bias for county i over the entire post-treatment period. It follows that the overall bias across all counties can be measured by taking the vehicle-weighted average of $-\frac{\kappa(Dshare_i-1)}{Dshare_i}$ across all i counties, in which case the overall bias measure is simply $\kappa \times 1.36$.

We rely on a March 2025 public opinion poll to infer estimates of κ (YouGov, 2025). Respondents were asked whether they currently own or lease a Tesla, and if not, whether they would consider owning/leasing a Tesla in the future. Especially helpful for us are follow-up questions about whether Elon Musk himself was the reason for their answers about owning/leasing a Tesla, and results are reported separately for those who voted for the Democratic or Republican candidate in the 2024 presidential election. Among Democratic voters, 71% report that Elon Musk is at least part of the reason why they do not currently own/lease a Tesla or would not consider doing so, while 2% report that Musk is the reason they do currently own/lease a Tesla or would consider doing so in the future. Among Republican voters, 3% report that Musk is at least part of the reason they currently own/lease a Tesla or would consider one, while 7% report that Musk is the reason they do not and would not consider it. The potentially unexpected part of these results is that Musk pushes more individuals who voted for the Republican presidential candidate towards Teslas than away.

Using these survey results, we estimate κ based on the assumption that the ratio of proportional responses about Musk's influence on propensities to own/lease a Tesla between Republicans and Democrats reflects $\kappa = \frac{\Delta\varphi_t^R}{\Delta\varphi_t^D}$. We estimate the parameter two ways. The first accounts for the way that Musk induces preference shifts among individuals within parties in both directions. Taking the ratio of the net effect within parties, we find $\kappa = \frac{3\%-7\%}{2\%-71\%} = 0.06$. In this case, because the net effect of Musk on Republicans is negative, our previous estimates of the Musk partisan effect on lost Tesla sales can be interpreted as an *underestimate* by 8% (because $0.06 \times 1.26 \approx 0.08$). The second estimate of κ is exploratory in the sense that we examine the consequence of simply ignoring Musk's influence in the less intuitive directions, based on the idea that some might find these responses less likely to reflect true purchasing preferences. In this case, we find $\kappa = \frac{3\%}{-71\%} = -0.04$, and this implies an *overestimate* of the Musk effect on lost Tesla sales of 5% (because $0.04 \times 1.26 \approx 0.05$).

The overall conclusion of the sensitivity analysis—informed by survey results on partisan differences in Musk's influence on the propensity to purchase or lease a Tesla—is that our estimates of the Musk effect on lost Tesla sales could be interpreted as either under- or over-estimates. However, in either case, the magnitudes of any potential bias would be relatively modest, in the range of minus 8% to plus 5%.

5 Implications for California's ZEV Target

The Musk-induced change in Tesla sales could have policy implications relating to state ZEV targets, which are intended to increase the market share of EVs. Many states have ambitious targets for increasing ZEV sales, with California as the leading example. California set a target requiring that 25% of new vehicle sales consist of ZEVs by 2026, increasing to 68% by 2030 and 100% by 2035.[18] The State is falling short of where it needs to be to meet the 2026 target based on projections, and analysts find that EV sales needed to be 28,000 vehicles greater in the first quarter of 2025 in order to have been on track (California Center for Jobs and the Economy, 2025).

How might California sales of ZEVs been different without the Musk partisan effect? To answer this question, we replicate our linear approach using only California data to estimate counterfactual Tesla sales, and instead of estimating the substitution to other EVs + hybrids, we estimate the substitution to other potentially qualifying ZEVs only. We find a statistically significant Musk effect that reduces Tesla sales, yet negligible substitution to other qualifying ZEVs (see Appendix Table A.2). Although there is less data upon which to make these estimates, the results suggest that lost Tesla sales lead to purchases of other vehicles not eligible under the ZEV standard, such as conventional hybrids, making the ZEV standard more difficult to meet. We then produce estimates of monthly counterfactual sales of qualifying ZEVs using our results on the Musk partisan effect on California Tesla sales and zero substitution to other ZEVs (see Appendix Figure A.5). Based on the point estimates, we find that the counterfactual ZEV sales would have been roughly 139,700 vehicles greater than observed in the first quarter of 2025—easily putting California on track to meet its ZEV target.[19]

6 Conclusion

This study highlights just how impactful a CEO's partisan actions can be. We show that Elon Musk, the world's wealthiest person and CEO of the most valuable automaker by market capitalization, had a dramatic effect on Tesla sales due to his politically partisan activities unrelated to Tesla's core business. The raw data alone show a dramatic change in the trend of Tesla sales in Democratic versus Republican leaning counties beginning in mid-2022. The media has widely covered how Tesla sales have been in decline. Yet, the often-cited statistics about how Tesla sales are falling below previous levels miss a fundamental part of the story: they ignore the counterfactual of what Tesla

[18] Specifically, the policy defines ZEVs as EVs, but up to 20% of the required ZEVs can be met with sufficiently long-range plug-in hybrids. In May 2025, Congressional action withdrew California's authority to have ZEV standards, although this is being litigated and California has not rescinded its targets.

[19] The magnitude of the Musk partisan effect on Tesla sales suggests that even if there were a high degree of substitution to other qualifying ZEVs, California might still have been on track to meet its target in the counterfactual scenario. For example, if the rate of substitution from Teslas to other potentially qualifying ZEVs were as high as 0.8, the counterfactual number of ZEV sales would have been approximately 28,000 vehicles higher in the first quarter of 2025. There are, however, other strong policy headwinds that may make the targets difficult in the future. One is that the "One Big Beautiful Bill Act" phased out the federal tax credit for electric vehicles in September 2025, and tariffs have raised the costs of many EVs more than of gasoline vehicles.

sales would have been without the Elon Musk partisan effect.

Our empirical analysis identifies the causal effect of Musk's partisan activities on Tesla sales and allows us to quantify the counterfactual. We use two different approaches: a DiD strategy that assumes linear trends, and a non-parametric triple DiD strategy that relies on an estimate (or a conservative assumption) about substitution from Teslas to other electric and hybrid vehicles. Both approaches yield similar results, pointing to the fact that Elon Musk appears to have significantly derailed the growth trajectory of Tesla. And Musk's adverse effects have been increasing over time. Based on the two approaches, we find that without the Musk partisan effect, Tesla vehicle sales between October 2022 and April 2025 would have been higher by an amount in the range of 67% and 83%, equivalent to between 1 and 1.26 million vehicles.

There are also spillover consequences of the Musk partisan effect to other markets and policies. We find a significant Musk-induced increase in the sales of other companies' electric and hybrid vehicles, whereby the Musk partisan effect increased sales of these vehicles in the range of 17% to 22% since completing his purchase of Twitter. The decrease in EV sales because of the Musk partisan effect also makes it harder for states to meet ZEV targets, as we found for California, and for achieving long-run greenhouse-gas emissions reduction goals more generally.

Our results underscore the large impact of Elon Musk's partisan activities on Tesla sales, other carmakers' EV and hybrid sales, and the achievement of ZEV targets. While this is an extreme example of partisan activity on the part of an especially high-profile individual, the results clearly show the wisdom of Michael Jordan's dictum.

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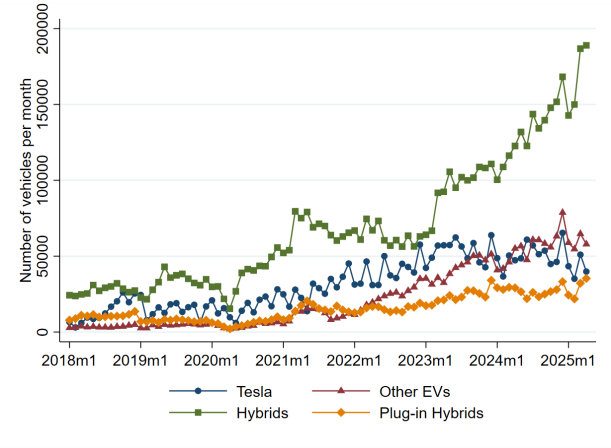
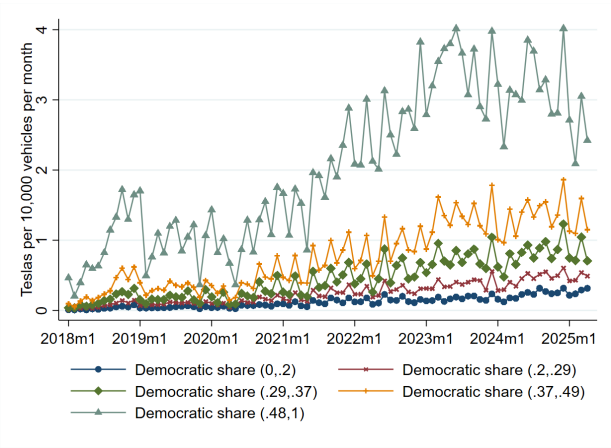
Figures

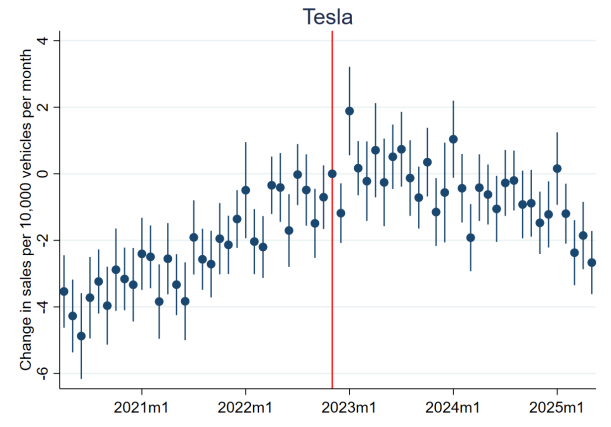


(a) Sales of Teslas, other EVs, hybrids, and plug-in hybrids over time

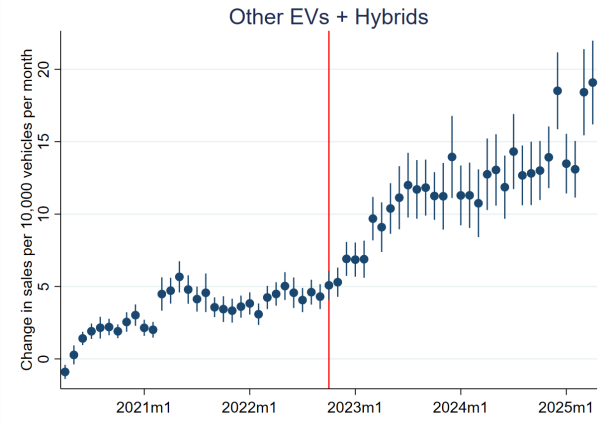


(b) Sales of Teslas per 10,000 registered vehicles across quintiles of counties based on the Democratic share of voters

Figure 1: Descriptive figures on vehicle sales

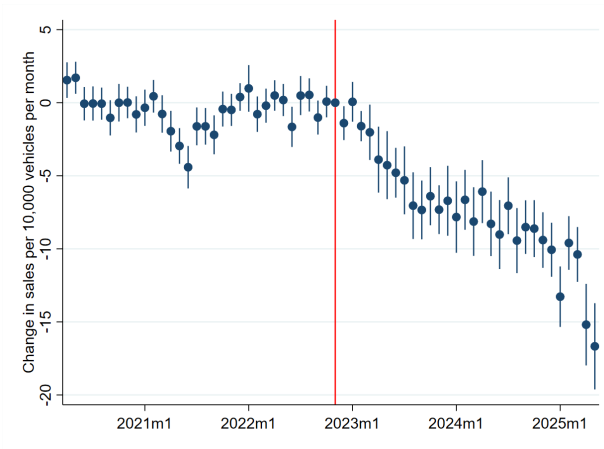


(a) Estimates for Tesla.

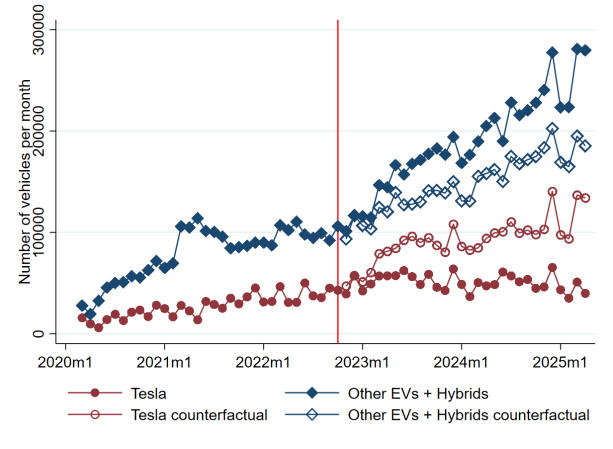


(b) Estimates for Other EVs + hybrids.

Figure 2: Estimates of the β_t coefficients for the DiD analyses, along with 95% confidence intervals

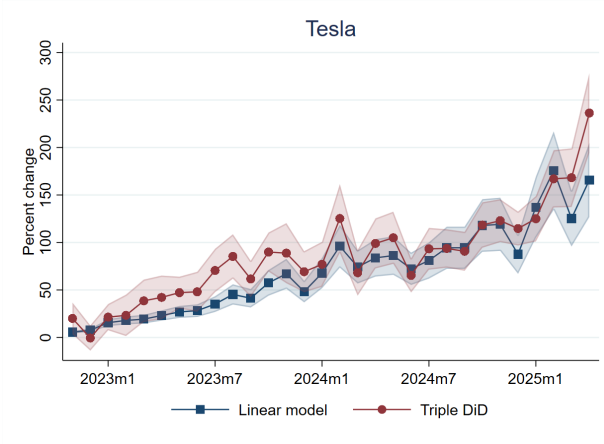


(a) Estimated β_t over time

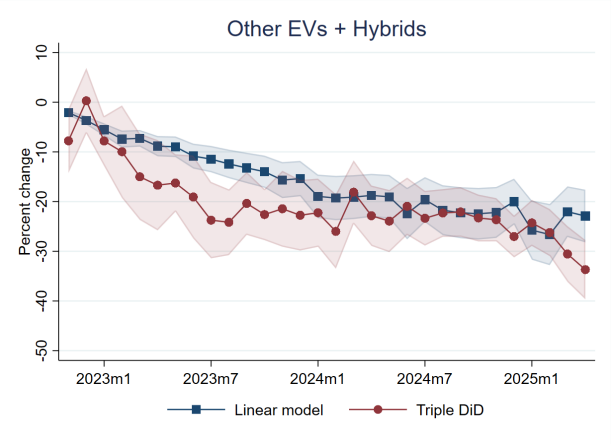


(b) Observed and counterfactual sales of Teslas and Other EVs + hybrids

Figure 3: Coefficient estimates with 95% confidence intervals and counterfactuals for the triple DiD approach



(a) Increased sales for Tesla



(b) Decreased sales for other EVs + hybrids

Figure 4: Counterfactual (with no Musk partisan effect) percentage change in monthly sales compared to observed, including the linear and triple DiD estimates and 95% confidence intervals

Tables

Table 1: Estimation results of specification (7) for Tesla and other EVs + hybrids

The effect Democratic share	Tesla	Other EVs + Hybrids
Pre-treatment trend, γ	0.147	0.171
	(0.016)	(0.016)
Pre- and post-treatment trend difference, δ	-0.195	0.191
	(0.023)	(0.023)
Post-treatment trend, $\gamma + \delta$	-0.048	0.361
	(0.010)	(0.029)
County FEs	Yes	Yes
State $\times$ month-of-sample FEs	Yes	Yes
Observations	$120,051$	$120,051$

Notes: Models are estimated with inverse variance weights and standard errors, reported in parentheses, are clustered at the county level. The sum $\gamma + \delta$ is calculated as a linear combination using the delta method for inference.

Supplementary Figures and Tables

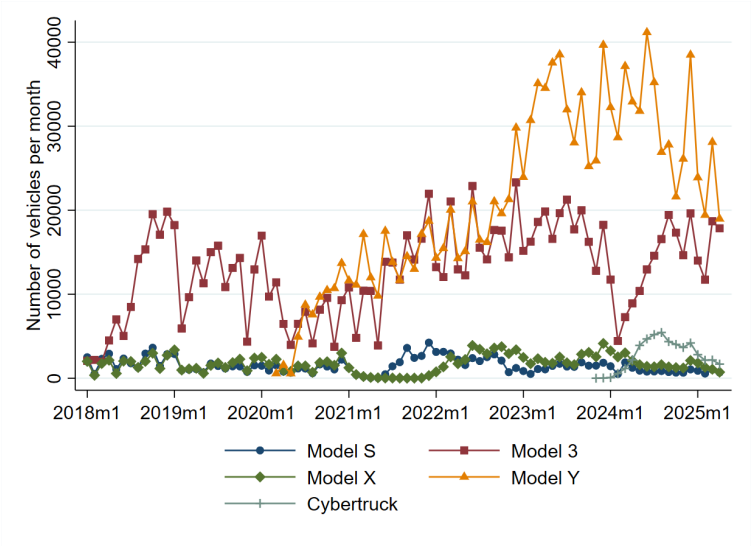


Figure A.1: Tesla sales of different models by month. Note that the Model Y, which is the best-selling Tesla vehicle, was introduced in early 2020, and we begin our analysis sample in March 2020, when Model Y registrations first begin to appear.

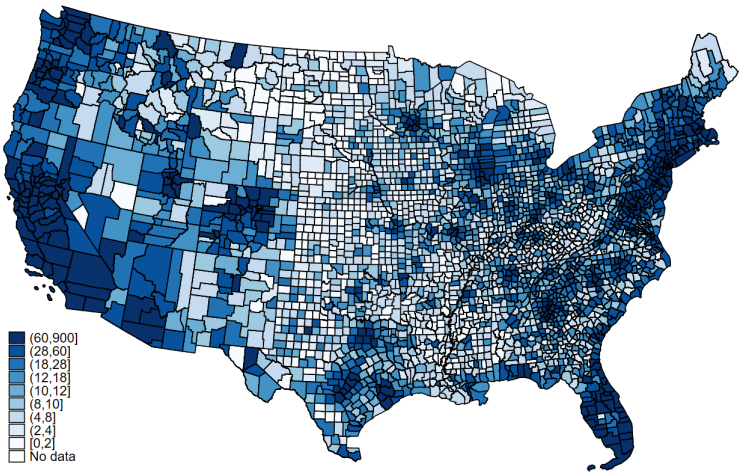
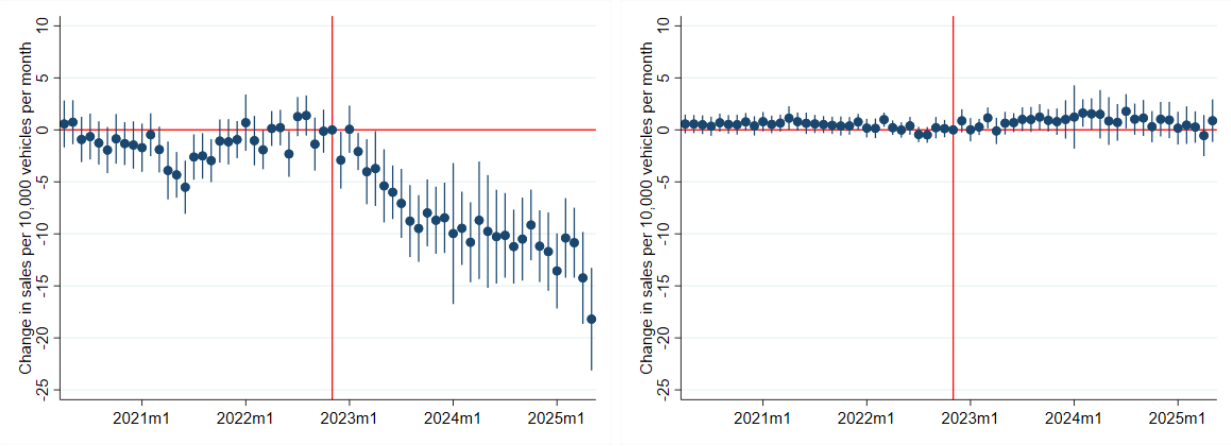


Figure A.2: Tesla sales per 10,000 registered vehicles by U.S. county. The map shows cross-sectional variation in the propensity to purchase a Tesla across counties.

Table A.1: Tests for differences between $Dshare_i$ greater or less than .5 in estimation of specification (7) for Tesla and other EVs + hybrids

The effect Democratic share	Tesla	Other EVs + Hybrids
Pre-treatment trend, γ	0.157	0.172
	(0.036)	(0.030)
Pre- and post-treatment trend difference, δ	−0.199	0.225
	(0.051)	(0.051)
$\gamma \times \mathbb{1}\{Dshare_i > 0.5\}$	−0.005	0.000
	(0.016)	(0.014)
$\delta \times \mathbb{1}\{Dshare_i > 0.5\}$	0.002	0.020
	(0.021)	(0.028)
County FEs	Yes	Yes
State × month-of-sample FEs	Yes	Yes
Observations	120,051	120,051

Notes: Models are estimated with inverse variance weights and standard errors, reported in parentheses, are clustered at the county level. Both coefficients on the interactions with $\mathbb{1}\{Dshare_i > 0.5\}$ are small in magnitude and statistically insignificant.



(a) Estimated β_ts over time for $Dshare_i < 0.5$

(b) Difference in the β_ts for $Dshare_i > 0.5$

Figure A.3: Test for heterogeneous effects in the triple DiD model between counties with $Dshare_i$ greater or less than 0.5. Panel (a) reports the β_t coefficients applicable to the low $Dshare_i$ counties, and panel (b) reports how each coefficient differs for the high $Dshare_i$ counties. Few differences are statistically significant and the magnitudes of the differences are exceeding small compared to the main effects.

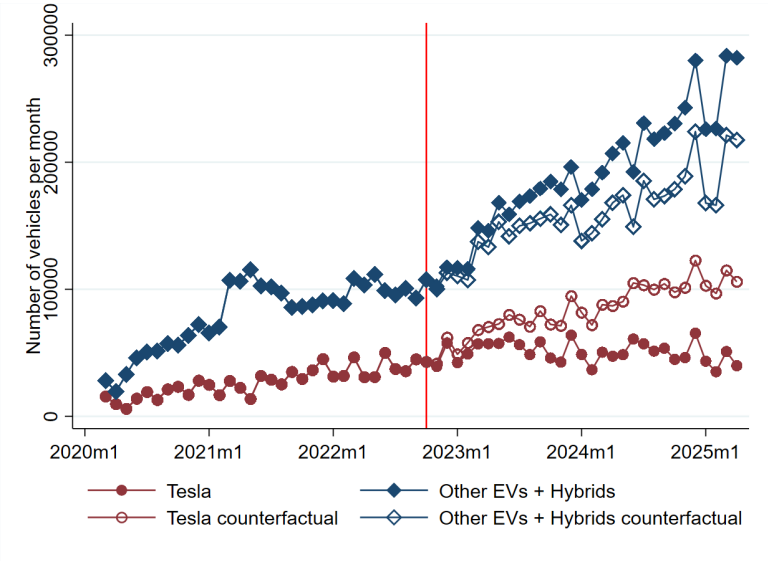


Figure A.4: Observed and counterfactual sales of Teslas and other EVs + hybrids, where the counterfactuals are based on the linear model. The figure is similar to Panel B of Figure 3 for the triple DiD approach.

Table A.2: Estimation results for California of specification (7) separately for Tesla and other vehicles qualifying for the State's ZEV mandate, others EVs + plug-ins

The effect Democratic share	Tesla	Other EVs + Plug-ins
Pre-treatment trend, γ	0.480	0.333
	(0.139)	(0.067)
Pre- and post-treatment trend difference, δ	-0.752	-0.000
	(0.190)	(0.102)
Post-treatment trend, $\gamma + \delta$	-0.272	0.333
	(0.067)	(0.123)
County FEs	Yes	Yes
State $\times$ month-of-sample FEs	Yes	Yes
Observations	3,469	3,469

Notes: Models are estimated with inverse variance weights and standard errors, reported in parentheses, are clustered at the county level. The sum $\gamma + \delta$ is calculated as a linear combination using the delta method for inference.

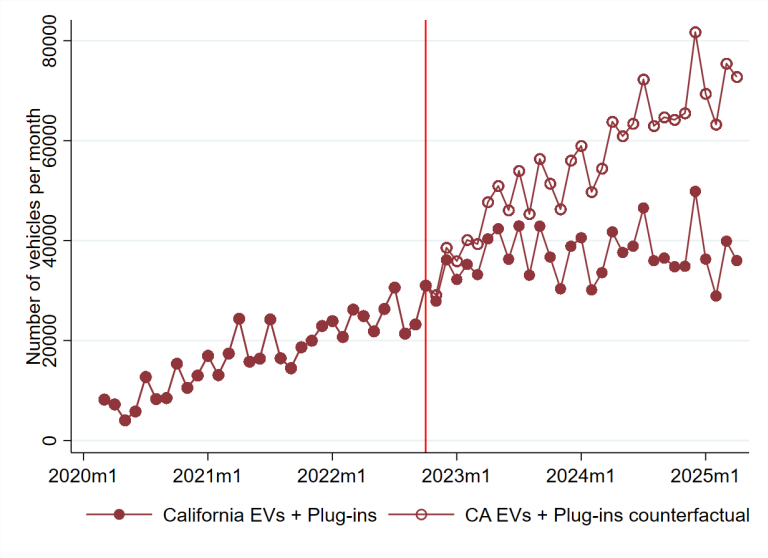


Figure A.5: Observed and counterfactual sales of vehicles qualifying for California's ZEV mandate (all electric vehicles and plug-ins).