

Electoral Impacts of Failed Revolutions: Evidence from Hong Kong's Umbrella Movement

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Abstract

Do anti-regime protests in electoral autocracies benefit the opposition by shifting the political preference of the bystanders? We seek an answer to this question by examining the electoral impact of Hong Kong's Umbrella Movement. Analyzing the election outcomes at the polling-station level shortly after the movement, we find that protest exposure, as measured by spatial proximity to protest sites, is positively correlated with the decline of electoral support for the opposition. Individual level surveys indicate that the adverse influences of protest exposure manifest themselves in elevating bystanders' sense of economic insecurity, even though the movement causes no persistent income loss, while enhancing political efficacy.

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1 Introduction

Most anti-regime protests in non-democracies failed to topple the incumbent government. Could they at least undermine the regime’s social support base by shifting the political preference of the citizens? In particular, would opposition parties be able to gain more votes in post-protests elections? This is an important question, because scholars of comparative authoritarianism often treat revolutions and authoritarian elections as two separate events. If anti-regime protests do help the opposition accumulate electoral strength, we have reason to believe that “democratization by elections” can be made possible by “revolutionary bandwagon” (Kuran 1991).

Recent empirical studies based on the experience of democracies show that social movements—such as the Civil Rights Movement and Tea Party rallies—benefit candidates who are aligned with the movement’s ideology (Madestam et al. 2013; Mazumder 2018). After being exposed to these movements, citizens may not only change their political views, but also develop a higher level of political efficacy (Wallace, Zepeda-Millán, and Jones-Correa 2014). The situation in non-democracies, however, can be more subtle, as anti-regime protests are likely prohibited in such regimes. To make their voice heard, protesters often need to break existing rules and take disruptive actions. These actions, including blocking roads, setting fire, and attacking the government building, mark a significant deviation from the everyday life, evoking a high level of anxiety among ordinary citizens towards the society’s future (Schwartz 2016; Stenner 2005). It is plausible that voters may end up blaming the opposition for destabilizing the status quo, thereby punishing it in the voting booth. If so, protest exposure can generate negative effects on the public support and electoral performance of the opposition.

We use Hong Kong’s Umbrella Movement as a case to test these two competing hypotheses. The Umbrella Movement, which broke out in Hong Kong in 2014, was a large anti-regime protest, involving the occupation of various areas by pro-democracy protesters for 79 days. Using the outcomes of the subsequent legislative election, we detect a remarkable negative impact of protest exposure, measured by spatial proximity to the protest sites, on the opposition’s support rate. Our differences-in-differences (DID) estimate finds that a one standard deviation decrease in the distance between a con-

stituency and the protest sites would cause a 3-6% decline in vote share of the opposition candidates. Turnout rate follows a similar pattern, although the magnitude is somewhat smaller.

Our results are robust to different proximity measures (driving time v. straight line), types of constituencies (territory-wide v. regional proportional representation), and clustered standard errors (constituencies v. geographical districts). In addition, we weight observations in our sample with their covariate balancing propensity score (Fong, Hazlett, and Imai 2018) to remove the impact of observable constituency characteristics. Our main results hold in the balanced sample created by weighting. We also replace the conventional dichotomous classification of political camps with a constituency-level ideology measure calculated from the ideal points of all Hong Kong legislator candidates in the 5th and 6th Legislative Council (2012-2016 and 2016-2017). Using this indicator, we find significant results that protest proximity is positively correlated with anti-opposition sentiment.

A placebo test and a sensitivity analysis are conducted to verify the validity of a key identification assumption, commonly known as parallel trends. In the placebo test, we apply the same DID analysis to the two elections before the Umbrella Movement. Consistent with our expectations, spatial proximity in these “placebo” elections loses its prediction power for the change in opposition vote share. On the other hand, the results of the sensitivity analysis suggest that our estimates will still be significant even in the presence of influential time-varying unobservables.

To explore mechanisms that drive the election results, we analyze the Asian Barometer Survey to gauge how public opinions in Hong Kong changed in the wake of the protest. Our DID estimate indicates that citizens living in districts near the protest sites experienced a higher increase in the anxiety over the city’s economic prospect, while the change in their reported income does not vary with proximity. In addition, consistent with the findings of studies based on the experience of democracies, we detect a significant increase in the average level of political efficacy after the movement, although the increase does not seem to depend on the proximity to the protest sites. Finally, using another individual level survey, the Hong Kong Election Study (HKES), we find that economic

insecurity is a crucial determinant of respondents' choice between the regime and the opposition in the 2016 election. We further demonstrate that the negative impacts of the protest concentrate on citizens with lower income, while young people who are politically active are more likely to convert to the opposition after the protest.

In addition to engaging the debate about the relationship between social movement and elections, our research also speaks to the broad literature in political science on revolutions and political transitions. Classic works in this field either emphasize the importance of structural factors (Moore 1966; Skocpol 1979) or actions taken by the state (Aytaç, Schiumerini, and Stokes 2017; Chang 2008) and the elites (Albertus and Menaldo 2018; Przeworski 1991). Our study, while taking an agency-based perspective, focuses on the role played by the protesters and the opposition in the dynamics of contention, especially how they interact with bystanders. The results should be relevant not only to theorists, but also to protest organizers in non-democratic countries.

The rest of the article is organized as follows. In the next section, we demonstrate our theoretical framework. In Section 3, We discuss background information about Hong Kong's political institutions and the Umbrella Movement, and then present our research design and hypotheses. Section 4 and 5 present the data and methods. Section 6 shows our constituency level results and robustness checks. We investigate the causal mechanisms of the protest's impact at individual level in Section 7 and Section 8, and conclude in the last section.

2 Theoretical Framework

Historically, not many anti-regime protests achieved their ultimate goal of overthrowing the incumbent government (Chenoweth and Stephan 2011). It is important to note, however, that successful revolutions seldom involve a single uprising. For this reason, an anti-regime protest that fails to topple the regime may still leave impacts on society, if not also sow the seeds of subsequent victory. Studies show that protests in general may produce various outcomes, including arousing the public's interest in politics (Zhang 2016) and the redistribution of *de jure* power (Dower et al. 2018). Nevertheless, their electoral impacts remain less well-understood. Our key concern in this article is how anti-regime

protests affect the political attitudes of ordinary citizens as manifested in voting behavior, especially under “competitive authoritarianism” (Levitsky and Way 2010) where the voting booth is a major battlefield between the regime and the opposition.

On the one hand, anti-regime protests likely enhance citizens’ interest in political participation by boosting their sense of political efficacy. Studies find that protests in democracies have a positive impact on the sense of political efficacy of those who were exposed to them (Enos, Kaufman, and Sands 2018; Wallace, Zepeda-Millán, and Jones-Correa 2014). Beckwith (2016) argues that even a failed social movement has similar effects, thus creating favorable conditions for subsequent mobilization. We have reason to believe that this effect is even larger in autocracies, because authoritarian governments often outlaw anti-regime information, organizations, and activities. They may even resort to blatant electoral fraud to signal their invincibility and irreplaceability (Magaloni 2006; Simpser 2013). Citizens who live in this repressive political environment may not be able to conceive of overthrowing the authoritarian edifice. Exposure to an anti-regime protest, especially when its turnout is large, helps unlock ordinary citizens’ imagination by disrupting the seemingly infallible political order. As Kuran (1991) points out, the rise of even a small set of individuals suffices to create a “revolutionary bandwagon” and significantly strengthen the opposition. It is possible that an enhanced sense of political efficacy helps coalesce a “negative coalition” against the authoritarian incumbent (Beissinger 2013).¹ As more people rally against the authoritarian incumbent, the likelihood of “democratization by elections” will become higher (Lindberg 2009). Even in the absence of power alternation, an empowered opposition will still significantly constrain the authoritarian incumbents.

Anti-regime protests may also shift people’s political preference closer to the opposition by exposing them to its democracy cause. In autocracies, the opposition often faces a great deal of hurdles to make their voice heard in society (Lohmann 1994). Anti-regime protests, be they successful or not, provide an opportunity for the opposition to promote the values of democracy. Previous studies show that social movements in democracies can indeed alter the views of bystanding citizens (Madestam et al. 2013; Mazumder 2018;

¹Although the concept of “negative coalition” is concerned with revolutions, it nevertheless has substantial political implications in contemporary autocracies, where multi-party, somewhat competitive elections are held on a regular basis (Levitsky and Way 2010).

Wasow 2016). We expect that the political-education effect of anti-regime protests in autocracies would be similar to or greater than that of garden-variety protests in democracies, as it is generally difficult for citizens in autocracies to gain access to alternative information.

On the other hand, anti-regime protests may have adverse impacts on public support for the opposition, as they inevitably disrupts socio-economic order. Unlike common protests in democracies, which are often intended to alter a certain policy within the existing political institutions, anti-regime protests seek a fundamental political change, and hence are usually prohibited by law. To achieve this goal, members of the opposition are willing to challenge the regime using disruptive or even violent strategies. They may initiate labor strikes, school boycotts, vandalism, and occupy protests in public areas. Similarly, the incumbent is determined to defend their political interest. They may retaliate by imposing curfews, shutting down public transport and online communication,² and restricting the freedoms of individual citizens. In sum, either side is willing to pay a hefty price to achieve their goal. Clashes between the protesters and the law enforcement may further foment unrest such as police brutality, riots, and looting.³ In fact, studies find that exposure to violent protests would have lasting impacts, either reducing support for the cause of the protesters (Sears and McConahay 1973; Wasow 2016) or increasing the animosity toward the protesting group (Beber, Roessler, and Scacco 2014).

It is worth emphasizing that even in the absence of observed violence, an anti-regime protest, which by definition aims to subvert the existing political order, may still provoke anxiety among ordinary citizens, thereby reducing their support for the opposition that initiated the disruption. Political psychologists have long posited that insecurity (Fromm 1941) and external threats (Adorno et al. 2019; Feldman and Stenner 1997; Rickert 1998; Stenner 2005) are major factors contributing to the development or activation of authoritarian personality. Consequently, those who have experienced the threats become more resistant to change and more longing for the status quo. As Jost and Napier (2011) succinctly put, “preserving the status quo allows one to maintain what is familiar and

²For instance, the Chinese authorities banned access to Instagram from mainland China shortly after the outbreak of the Umbrella Movement in Hong Kong (Hobbs and Roberts 2018).

³Many medical studies have shown that exposure to social unrest such as terrorism is linked to the development of anxiety (For example, Schuster et al. 2001; Silver et al. 2002).

known while rejecting the risky, uncertain prospect of social change; traditionalism and hierarchy generally provide reassurance and structure (p. 92).” For this reason, when an anti-regime protest breaks out, however peaceful it is, it may still trigger worries about political turmoil (e.g. political violence and conflicts) and economic instability (e.g. deterioration of job prospect and business environment). If the authoritarian incumbent and the citizens have a common stake in preserving the status quo, any force that threatens socio-economic stability may end up helping the former rally electoral support.⁴

In summary, there is a theoretical reason to believe that anti-regimes protests in autocracies would increase the opposition’s public support, although some extant studies suggest otherwise. It is therefore *ex ante* unclear the extent to which an anti-regime protest would benefit or undermine the electoral performance of the opposition. We seek an answer to this question by taking advantage of the heterogeneity of protest exposure afforded by the difference in spatial proximity of one’s residence to the locations of anti-regime protests. As Latané (1981) points out, the salience of most social events is associated with one’s physical proximity to them. This observation is supported by studies related to social movements (Madestam et al. 2013), campaigns (Atkinson et al. 2014), and terrorist attacks (Loewenstein et al. 2001). In our case, the spatial proximity of one’s residence to an anti-regime protest would increase one’s exposure to it, including protest messages and the chaos caused by the protesters’ actions.

3 The Umbrella Movement in Hong Kong

3.1 Background

Hong Kong, as one of the “Special Administrative Regions” of China, is a highly developed cosmopolitan city, with a GDP per capita in 2014 at US\$40,247. Under the principle of “one country, two systems,” Hong Kong people enjoy a high degree of autonomy, including freedom of speech and an independent judiciary. They have the right to elect 40 out of 70 seats of the city’s legislature in relatively fair elections, where opposition parties are allowed to compete.

⁴ Authoritarian governments are keenly aware of citizens’ aversion to socio-economic instability. It is fairly common to see the ruling party of these regimes portray itself in state propaganda as a force for stability (Pearlman 2013).

Despite the “one country, two systems,” Beijing has a decisive influence over the selection Hong Kong’s chief executive – the head of the city – and 30 indirectly elected legislative seats. For this reason, many view Hong Kong as yet another electoral autocracy (Wong 2015). According to the Basic Law, the city’s mini-constitution, universal suffrage will be eventually implemented as the method to elect the chief executive, although the time frame is not clearly specified.

Since the sovereignty transfer in 1997, pro-democracy activists and politicians alike continued to urge Beijing to honor its promise. To their dismay, the Chinese National People’s Congress (NPC) announced in 2014 that universal suffrage can be implemented on the condition that candidate nomination is effectively controlled by Beijing. This decision led many Hong Kong citizens to believe that Beijing shut the door on democratization. Benny Tai, a local law professor, called for an extensive occupy movement in protest of the NPC decision. Many pro-democracy groups and individuals supported the idea. Student activists initiated a territory-wide school boycott. Pro-democracy academics echoed by organizing teach-outs near government headquarters, where the student protest took place. Pro-democracy trade unions and opposition parties gradually joined the fray. The occupy protesters were dispersed by heavily armed police, which ended up provoking more people to take to the streets. The memory of the Tiananmen Incident still resonated powerfully with many Hong Kong citizens. Yet, in defiance of the looming threat of brutal crackdowns, unarmed civilians blocked major downtown areas, ushering in the Umbrella Movement that lasted 79 days. Although anti-regime demonstrations were routinely held in the city, the Umbrella Movement was the first illegal democracy protest that openly challenged the authority of both the Hong Kong and Beijing governments.

The protest was unable to extract any concession from Beijing, partly because the protesters failed to agree on what concession they wanted from the authorities. Many protesters, however, took pride in their involvement in a spontaneous and leaderless movement (Cheng and Chan 2017), although in the eyes of many bystanders, the movement gradually lapsed into an aimless public nuisance. The number of tourists to the city experienced a rapid decline during the protest, while shops near the occupy sites

reportedly suffered a significant drop in sales (Hong Kong's Information Services Department 2014). Admittedly, the socio-economic risks affected those who lived in or near the protest sites most, as they were the eyewitness of the inconveniences created right next to their residential buildings. Meanwhile, the government adopted an attrition tactic toward the movement (Yuen and Cheng 2017). It did not escalate the confrontation with the protesters, perhaps for fear that repression would reinforce the protesters' moral high grounds. For weeks, it took no action of clearing the protest sites, except that *pro-establishment* politicians and media continued to inveigh against the protesters for disrupting socio-economic order. Public support of the protest seemed waning, as even Benny Tai, the initiator of the occupy movement, urged the occupy groups to retreat (Reuters 2014).

Although the Umbrella Movement ended in the government's unimpeded site-clearing operation, resistance continued in society. Traditionally, opposition parties in Hong Kong were collectively known as the *pan-democrats*. New political groups with an anti-China or localism platform were formed after the movement. Some of these *localist* groups participated in a legislative election that was held about two years later, in hopes of riding on the momentum of the Umbrella Movement or making a last-ditch effort to create a landslide victory for the opposition. However, in the absence of systematic, large-scaled electoral fraud, the opposition captured only one additional popularly elected seat.⁵

3.2 Hypotheses

The Umbrella Movement and the ensuing election provide a rare opportunity to test the competing hypotheses about the electoral impacts of anti-regime protests. Because the protest broke out unexpectedly between two elections, the reverse causality that election results affected protests is unlikely. The geographical compactedness of the city allows us to measure the public's responses to the movement at a highly disaggregate level, which is afforded by rich election and survey data in Hong Kong. We here posit two competing hypotheses in relation to the potential impacts of protest exposure:

Hypothesis 1a. In areas near the protest sites, the **decrease** of the opposition's

⁵Despite the absence of large-scaled electoral fraud in legislative elections, Wong (2017) finds that there is a systematic redistricting bias against the opposition in the election of the District Councils, the lowest elected tier in Hong Kong.

vote share is more pronounced.

*Hypothesis 1b. In areas near the protest sites, the **increase** of the opposition's vote share is more pronounced.*

In addition to these main hypotheses, we will also explore factors that drive the election results. Based on previous discussions, we will focus on three different mechanisms: sense of political efficacy, attitude toward democracy (the key movement frame of the Umbrella Movement), and anxiety about the socio-economic situation.

Hypothesis 2. In areas near the protest sites, citizens have a stronger sense of political efficacy.

Hypothesis 3. In areas near the protest sites, citizens have a more favorable view of democracy.

Hypothesis 4. In areas near the protest sites, citizens are more worried about the socio-economic situation.

4 Data

4.1 Dependent Variables

We collect data from several sources. The first part of our dataset is the outcomes of Legislative Council elections at the polling station level in 2008, 2012 and 2016, which are publicly available from Hong Kong government's election websites. For each election, we are able to obtain information about the lists of candidates, their party and camp, and how many votes they won in each polling station. We aggregate these records to the District Council Constituency (DCC) level – the lowest level for which digital maps and regional statistics are available⁶ – and calculate the vote share of each camp for all DCCs

⁶District Councils are also the lowest elected tier in Hong Kong.

by summing votes of candidates from the same camp and dividing it by the total votes in that constituency.

In 2016, there were 539 polling stations located in 431 DCCs, which were scattered in the 18 geographical districts of the city⁷. For brevity, we will use the term “constituency” when referring to a DCC and “district” when referring to one of the 18 geographical districts. Some new constituencies emerge in 2016. We drop them, as they do not permit inter-temporal comparison. This leaves us a sample of 401 constituencies for the main analysis, and 399 for the placebo tests.

The vote share of the opposition in each constituency is the dependent variable of interest in our test of Hypothesis 1a and 1b. The opposition force consists of two factions, the *pan-democratic camp* and *localist*. In addition, there are two types of legislative seats in Hong Kong: the geographical constituencies and the functional constituencies. The former include 35 seats (henceforth “regular seats”) that are elected to represent five Legislative Council constituencies of Hong Kong. As for the latter, five seats (known as the “super seats”) are elected by all the eligible voters based on territory-wide proportional representation.

For a more fine-grained measurement of political preference, we construct an indicator of each constituency’s average ideology, based on the vote share and ideal point of elected legislators (see the method section for details). These ideal points are estimated using roll-call voting records of all the legislators from 2012 to 2017. The records are published on Legislative Council’s website.

4.2 Independent Variables

To measure proximity to protest sites, we use two quantities: the minimum straight-line distance and driving time to the four occupy sites. We prefer these continuous variables to a dichotomous one (e.g. within the five kilometers range of the occupy sites) as they allow for more flexible estimation. These measures are collected using digital maps of DCCs and Google Maps API. We choose driving time instead of public transportation time, because the latter is not available for certain locations (e.g. the top of a hill)⁸.

⁷See Table A1 in appendix for more details on Hong Kong’s administrative units

⁸Our main findings will remain robust if we use public transportation time and drop constituencies with missing values. See Table A2 in the online appendix B.

The two measures are our variables of interest, and will be denoted as *Straight-line* and *Driving time*, respectively.

We control a variety of demographic variables at the DCC level to reduce potential omitted variable bias. The data of these variables are downloaded from the websites of the 2011 census and 2016 by-census conducted by Hong Kong Census and Statistics Department. The variables collected range from local population structure to socio-economic characteristics.

4.3 Individual-level Data

To examine the impacts of the protest at individual level, we use two independent public opinion surveys. The first is the *Asian Barometer Survey* (ABS). Similar to Barometer Surveys in other continents, the ABS is a pooled cross-sectional data project aiming to investigate political views of Asian citizens. We analyze the Wave 3 and 4 data of the ABS Hong Kong data. These two waves were collected approximately two years before and after the Umbrella Movement. Each wave has around 1,200 respondents. Questions in the ABS include each respondent's district of residence, demographic information, and political attitude in multiple dimensions. Its dynamic structure enables us to infer changes brought by the protest at each district.

The second survey data that we use come from the Hong Kong Election Study (HKES). The survey was implemented by professional survey companies (SSI and YouGov) using Internet surveys. The sample is representative of the Hong Kong population. We focus on the pre- and post-election surveys of the 2016 Legislative Council election. The advantage of the HKES surveys is that they explicitly ask the vote choice of the respondents in the 2012 and 2016 elections. These two questions help us compare the political preference of the same individual before and after the protest as in panel data, and link their vote choice to the perceived economic insecurity. After removing missing values and respondents who did not turn out in either election, we have a sample of about 1,100 Hong Kong voters.

5 Estimation Strategies

We adopt a differences-in-differences (DID) approach to test our hypotheses derived in Section 3. As we have pointed out, in a Legislative Council election, citizens in Hong Kong vote for both regular legislative seats and “super seats” at the same time. Hence, we treat them as two independent elections, and estimate the following equation for each of them:

$$\begin{aligned} Dem_VoteShare_{c,t} = & \mu + \beta \mathbb{1}\{PostUmbrella\} * Distance_c \\ & + \gamma \mathbb{1}\{PostUmbrella\} + \alpha_c + \epsilon_{c,t} \end{aligned} \quad (1)$$

where c and t indicate constituencies and years (2012 or 2016) respectively; $Dem_VoteShare_{c,t}$ is our outcome variable, the vote share of the opposition candidates in constituency c , year t ; $\mathbb{1}\{PostUmbrella\}$ is an indicator function which equals to 1 for observations from the 2016 election and 0 otherwise; $Distance_c$ is our key independent variable, driving time or straight-line distance from constituency c to the occupy sites; α_c is constituency fixed effect, and ϵ_{ct} is the idiosyncratic random shock. Standard errors are clustered at constituency level to account for the temporal correlation of the outcome variable.⁹

After taking first difference on both sides of Equation (1), one can see that the equation estimates how the change of opposition vote share ($\Delta Dem_VoteShare_{c,t}$) varies with geographical distance to the occupy sites. The approach employed here differs slightly from the conventional DID, as we have no distinct treated and control groups. In other words, we are estimating the slope of a continuous treatment “dose function,” rather than a binary treatment indicator. The key identification assumption is still “parallel trends,” which assume that had the Umbrella Movement not occurred, the vote share change of the opposition in all these constituencies would have remained more or less the same. Although this counterfactual scenario is unobservable, we can still indirectly test the assumption by analyzing election results prior to the Umbrella Movement. If the assumption holds, the estimate of β should be indistinguishable from zero.

It is possible that the relationship between $\Delta Dem_VoteShare_{p,c}$ and $Distance_c$ is

⁹Higher level clusters and spatial HAC standard errors will be used in the robustness checks part.

driven by confounding variables that lead to diverging trends of constituencies. For example, for protests that broke out in the business center of Hong Kong, the opposition's vote share could have dropped more significantly for reasons irrelevant to the protest (e.g. the businessmen are dissatisfied with some policy). To alleviate this concern, we adopt a novel approach proposed by Fong, Hazlett, and Imai (2018), which involves a non-parametric algorithm that calculates the covariate balancing propensity score (CBPS) for a continuous independent variable. Weighting observations by the score can create a balanced sample and block the causal path between the covariates and the key predictor $Distance_c$.

We also control for the interaction of the covariates with the period dummy in the regression.¹⁰ We check the influence of migration by investigating the correlation between the ratio of emigrants and the distance to occupy sites at constituency level. To account for the influence of unobservable confounders, we use a sensitivity test developed by Carnegie, Harada, and Hill (2016), which shows the necessary magnitude of unobservable variables' effect to offset the effect of the variable of interest.

Another potential threat against our estimation strategy is that the ideology of legislators is not necessarily a dichotomous variable. As such, the underlying political preference of Hong Kong citizens cannot be accurately captured by the vote share of different camps. For example, we may over-estimate the change of citizens' political preference if some popular moderate opposition politicians joined the pro-establishment camp before the 2016 election. To exclude this possibility, we first estimate the ideal point of all the legislative candidates,¹¹ and then calculate the average ideology of each constituency by weighting each candidate's ideology score with his or her vote share in this constituency. This indicator of average ideology enables us to measure the impact of the protest more accurately.

The analysis using individual level surveys follows the same approach. However, since geo-location information in both the ABS and HKES data is available only at the level of the 18 geographical districts, we have to use the minimum distance between

¹⁰The covariates are chosen by our expert judgement. To ensure that the variable choices are appropriate, we report in the online appendix the regression result with covariates selected by a machine learning algorithm known as LASSO.

¹¹The ideal point of elected legislators is estimated based on their roll-call records. The estimation is done via EM algorithm proposed by Imai, Lo, and Olmsted (2016). The ideal point of lost candidates are treated as equal to the average ideological score of elected legislators from the same party.

each district's geometric center and the occupy sites as the independent variable. The standard errors are also clustered at district level. Because the opinion-survey data are pooled cross-sectional rather than panel, we replace individual fixed effects with district dummies in estimation. Individual attributes such as gender, age, and education level are added as extra controls to strengthen the identification assumption.

6 Protest Exposure and Electoral Support for Opposition

6.1 Changes in Opposition Vote Share After the Umbrella Movement

We start by showing a map of Hong Kong's constituencies to show the difference in vote share for the opposition between the 2012 and 2016 super-seat elections. Darker colors indicate a larger vote share increase. Occupy sites are denoted by white stars on the map. It is noteworthy that the opposition candidates's vote share increase is less pronounced in constituencies near the occupy sites and more so in the city's periphery.

We can find the same pattern in Figure 2, which displays the bivariate relationships between the vote share change for the opposition and each constituency's distance to the occupy sites. On the left hand side of Figure 2, the independent variable is the driving time, and on the right hand side it is the straight-line distance. Graphs in the first and second row are for the super seats and the regular seats elections, respectively. One can see that as the proximity to the protest sites increases, the vote share of opposition candidates drops more dramatically in both elections. In the last row of Figure 2, we divide the opposition into the *pan-democratic camp* and the *localist camp*. The pattern seems to be driven mainly by the former rather than the latter.

To verify findings obtained from Figures 1 and 2, we conduct regression analyses based on Equation (1). The results are displayed in Table 1. The first two columns show estimates for the super-seat election, and the next two columns are for the regular-seat election. In all the cases the coefficient of our key predictor, the interaction of the distance to occupy sites and the indicator for the 2016 election, is statistically significant with the expected sign. The estimate suggests that the vote share decline of opposition camp candidates after the protest will be 6% larger in the super-seat election and 3%

in the regular-seat election, if the constituency's driving time decreases by one standard deviation (about 10 minutes). Such an effect is highly salient given the fact that the standard deviation for the vote share change of the opposition candidates in the two elections are 10% and 6%, respectively. The result is similar if we use the straight-line distance. Moreover, the estimates also imply that the popularity of the opposition candidates decreases in constituencies close to the occupy sites after the Umbrella Movement ($\hat{\gamma} < 0$), and they perform better in the super-seat election than in the regular-seat election. In the last two columns, we estimate Equation (1) separately for the *pan-democratic camp* and the *localist camp*. The coefficient on the interaction term is significantly positive only in the former case. For the latter, the coefficient is even smaller than zero, although it is not precisely estimated. The result again supports our finding in Figure 2.

Table 2 displays the analytic results regarding turnout rate. Conventional wisdom suggests that supporters of the opposition behave more spontaneously when it comes to voting (Wong 2015). Therefore, a high turnout is more likely to reflect the success of the opposition. As may be seen in the first two columns, in both the regular-seat and super-seat elections, there is a strong positive relationship between turnout rate and the opposition's vote share. On average, a 1% rise in turnout rate will boost the opposition's vote share by almost the same amount in the super-seat elections, and 0.21% in the regular-seat elections.

In addition, the change of turnout rate after the protest follows a trend similar to the vote share change of the opposition. As presented in the last two columns, the turnout rate is also a decreasing function of proximity to the protest sites, although the average turnout rate becomes higher after the protest. The magnitude of the influence, however, is much lower compared with that on the vote share. Turnout rate is only 0.3 percent higher when the distance increases by one standard deviation. Given its relatively weak substantive significance, we have reason to believe that the protest tends to change citizens' party preference, rather than their propensity to vote.¹²

The election results, therefore, strongly favor our Hypothesis 1a over Hypothesis 1b. Exposure to this anti-regime protest, measured by proximity to the protest sites, produces

¹²This is further confirmed by additional mediation analysis using the method proposed by Imai, Keele, et al. (2011). See Table A4 in appendix B.

a negative impact on the electoral performance of the opposition parties. It also explains why the opposition wins only one extra seat in the 2016 election. In the following section, we will check the robustness of the main findings and examine the potential mechanisms that drive the election results.

6.2 Robustness Checks

In Figure 3, we show how our estimates change after weighting observations with the covariate balancing propensity score (CBPS). Unweighted results are on the left and weighted results are on the right. All the estimates are standardized for the convenience of comparison. Covariates selected to calculate the score include the share of married citizens, the share of college students, the share of medium-income (monthly income higher than 20,000 HK dollars¹³) and poor (monthly income lower than 6,000 HK dollars¹⁴) citizens, and the share of trade and financial industry practitioners. We also control for the share of Mandarin speakers.¹⁵ Clearly, weighting significantly reduces the correlation between the key predictor and the covariates. After weighting, most correlation coefficients become insignificant (in black). As may be seen from the first two rows (in red), the coefficients on our variable of interest remain statistically significant even after weighting¹⁶.

If we directly add the interaction of these covariates with the period dummy into the regression, the magnitude of the key coefficient's estimates will drop: more than 13% for the super-seat election and 47% for the regular-seat election. Yet, the estimates remain significant. For the pattern of migration, we find that neither the level or the change of emigration ratio is correlated with proximity. Details of these results are reported in Table A3 in Appendix B and Figure A3 in Appendix A, respectively.

Table 3 presents estimates with alternative dependent variables or standard errors. First, the dependent variable is replaced by the estimated average ideology for each constituency, while the model specification remains the same. Results in the first two columns support our main finding: constituencies close to the protest sites are more likely

¹³About 2,500 US dollars

¹⁴About 764 US dollars

¹⁵Cantonese, rather than Mandarin, is the common dialect in Hong Kong.

¹⁶Results remain largely the same, even if we control for those covariates that are still significant after weighting.

to become pro-government, and this is true for both the super-seat and the regular-seat election. In the other four columns of Table 3, we test the robustness of our standard error estimation by clustering at higher level (18 districts) or accounting for the spatial correlation among constituencies via the spatial HAC standard errors (also known as the Conley standard errors). The coefficients of the key predictor are always significant.

6.3 Placebo Test and Sensitivity Test

The CBPS method and regression with covariates allow us to control the influence of observable confounders. It is still possible, however, that our findings are plagued by some unobservable confounders. Placebo test and sensitivity test can help diagnose the extent to which the influence of unobservable confounders undermine the validity of our main findings.

In our placebo test, we examine if the spatial proximity effect is unique to the studied period. If we identify a similar spatial proximity effect in elections prior to the Umbrella Movement, this would imply that the spatial proximity effect is unlikely due to the anti-regime protest. We compare the election outcomes between the 2008 and 2012 legislative elections. Because the super seats election did not exist in 2008, we only consider the regular seats election when examining the vote share change for the opposition. The results are shown in Figure 4.

No matter whether we use the driving time or the straight-line distance as the independent variable, the difference in the opposition's vote share between the two elections is fairly stable over proximity and always fluctuating around zero. This is exactly what we should expect when the parallel trends assumption holds. In fact, we show in the online appendix that before the protest (i.e. in the 2008 and 2012 elections), the correlation between the opposition's vote share and the distance is negative. It turns positive only after the protest (see Figure A1 in appendix A).

Results of the sensitivity test are presented in Figure 5. The left graph is for super seats election and the right one for regular seats election. The x-axis in each graph represents the correlation between the unobservable confounders and the treatment, ζ^z . Similarly, the y-axis marks the correlation between the unobservable confounders and the

outcome,¹⁷ ζ^y . ζ^z and ζ^y reflect the influence of the unobservables on the treatment and the outcome, respectively. For each pair of (ζ^z, ζ^y) , we can calculate the estimate for the treatment effect and its p-value. Contours on the graphs indicate the combinations of (ζ^z, ζ^y) that would lead to the same treatment effect estimate (labelled on each contour). Among all the contours, the red ones are where the estimated effect would be zero and the blue ones are where it turns insignificant.

Red plus signs and blue triangles show the correlation coefficients between each observable covariate and the treatment as well as the outcome.¹⁸ As may be seen from the figures, the unobservables must be larger than any of the observable to render the variable of interest insignificant. In the super-seat election, this happens when both ζ^z and ζ^y are larger than 0.5. As for the regular-seat election, the estimate becomes insignificant when both ζ^z and ζ^y are larger than 0.3. They suggest that our estimates will not be insignificant unless the unobservables are as predictive as the most predictive covariate, which is quite unlikely in practice.

7 Mechanisms

In this section, we explore mechanisms that drive the election results, and offer more in-depth interpretations for the main findings. Our dependent variables in this section are three attitudinal constructs (anxiety about the socio-economic situation, sense of political efficacy, and attitude toward democracy). We measure them using closely related questions available in the ABS survey. For instance, to gauge anxiety about the socio-economic situation, we use two questions that ask respondents to report their evaluation of Hong Kong's economic situation at the present and in the past year. To avoid the problem of multiple inference (Anderson 2008), we standardize all the question answers and apply Principal Component Analysis (PCA) to generate one aggregate variable - PCA score¹⁹ - for each construct. These PCA scores capture the main variation in each attitudinal construct, and are used as our dependent variables.²⁰

¹⁷Without loss of generality, we assume that the unobservables are positively correlated with the outcome.

¹⁸The red plus sign suggests that the covariate actually has a negative correlation with the outcome. But for simplicity the sign is flipped over. It will not affect the result as only the strength of the correlation matters, not the direction.

¹⁹We take the score for the first component.

²⁰In Table A8 of online appendix B we show results of each question as the dependent variable.

In Table 4A and 4B, we present estimation results for each PCA score. Signs of the scores have been adjusted, so that higher values indicate stronger attitudes. Models in odd columns contain both the interaction term and the period dummy, and in even columns they have only the period dummy. In the latter case, the coefficient on *Post Umbrella* reflects the average change in the indicator before and after the protest. In the first two columns of Table 5A, we present estimates for the protest's impact on perceived economic insecurity. It is apparent that the Umbrella Movement significantly raised the citizens' anxiety of the society's economic situation in areas near the protest sites, and this rise of anxiety diminishes with the distance to those sites. The finding supports our Hypothesis 4.

A natural follow-up question is: Did the protest result in persistent economic loss to the protest areas? We answer this question using each respondent's reported income level provided by the ABS. As with other indicators, this variable, which consists of five levels arranged in an ascending order, is first normalized before the regression analysis. The result is reported in the last two columns of Table 4A. Interestingly, the average income level of these respondents actually became higher after the protest, and there is no systematic spatial variation.²¹

The first two columns of Table 4B are on respondents' approval for democracy. Neither the time dummy nor the interaction term has a significant coefficient in column 1. The same is true for the period dummy in column 2. We find no statistical support for Hypothesis 3. The result may suggest that the value of democracy had been well understood by Hong Kong citizens; their attitude was not altered by a single movement. In the third and the fourth column, we report results for the sense of political efficacy. It turns out that the average political efficacy becomes higher after the Umbrella Movement, but the change does not vary significantly by spatial proximity to the protest sites. The result implies that the enhancement of the sense of political efficacy is unlikely dependent on physical exposure to the protest; for those who did not experience the protest firsthand, their sense of political efficacy may improve as a result of exposure to it through other channels (e.g. online communications).

²¹In Figure A6 of appendix A, we provide evidence that the perception of economic insecurity is strengthened by biased news reports

To summarize, the co-evolution of economic insecurity and the opposition's vote share change implies that the latter is possibly mediated by the former, rather than other variables. The increase of average political efficacy, on the other hand, explains the rise of average turnout rate and the opposition's vote share in constituencies far away from the protest sites.

8 Heterogeneous Impacts of Protest Exposure

Our main findings are based on data available at the polling station level. To ensure that our findings are not driven by ecological fallacy, we repeat the DID analysis using the vote choice of respondents in the 2012 and 2016 elections reported in the HKES data. We further divide respondents into three categories based on their vote choice:²² *defectors*, who supported the opposition in 2012 but voted for the incumbent in 2016; *stayers*, who voted for the opposition in both elections; *joiners*, who switched from supporting the incumbent in 2012 to supporting the opposition in 2016.²³ We treat *stayers* as the benchmark, and test how *defectors* and *joiners* deviate from the benchmark in various aspects. The results will unveil determinants of the individual heterogeneity in response to the protest.

Table 5 shows results of the individual level DID analysis using HKES data. The dependent variables are whether the respondent voted for the opposition (the first two columns), and whether the respondent voted (the last two columns) in the 2012 and 2016 elections. Even though the variation of the independent variable now is at district level, and the dependent variables take only three values $\{-1, 0, 1\}$ ²⁴, we can still observe significant estimates, which support the findings at the constituency level: after the protest, many voters switched from the opposition to the *pro-establishment camp* in areas close to the occupy sites, and the turnout rate also drops in those areas. Irrespective of which measure of proximity we used, we find that when the distance increases by one standard deviation, the probability for the respondent to switch camps will rise by around 2%. The effect's magnitude is comparable to that of previous results. As personal

²²We follow the approach of Hale and Colton (2017).

²³Respondents who voted for the incumbent in both 2012 and 2016 are dropped as they are not our main focus.

²⁴Note that we have removed all the respondents who didn't vote in either the 2012 or the 2016 election.

characteristics have been differenced out, the finding is unlikely driven by unobservable individual-specific confounders.

After dividing respondents in the HKES into three groups based on their vote choice in 2012 and 2016, we find that the relative size of *defectors*, *joiners*, and *stayers* is about 2:1:10. The first fourteen rows of Figure 6 displays the difference between *stayers* and the other two groups - *defectors* and *joiners* - in seven dimensions. Red lines represent *joiners* and blue lines represent *defectors*. From these comparisons, we know that *defectors* live closer to the protest sites, earn less, and are less politically knowledgeable. On the other hand, *joiners* tend to be younger, more likely to be female, and to contact elected politicians, although they also seem to be less politically knowledgeable²⁵. The findings again confirm our claim that proximity matters. They further suggest that the protest's negative impact concentrate on those with a lower income level. In the appendix, we use the ABS data to show that protesters in the Umbrella Movement and *joiners* here are alike in many respects, which implies that the opposition succeeded in mobilizing only a narrow segment of the population.²⁶

The last two rows of Figure 6 (black lines) display the correlation coefficients of respondents' vote choice in the 2016 election with both perceived economic insecurity and political efficacy.²⁷ Although we possess no information on how the two indicators change between the two elections, the results show that respondents' tendency to vote for the opposition in 2016 is negatively correlated with the level of economic insecurity, and positively correlated with the level of political efficacy. Both coefficients are significant at 5% level, thus confirming the importance of economic insecurity in affecting voting behavior. The results also help explain the previous finding that the *pan-democratic camp*, the moderate wing within the opposition, suffered more than the radical *localists*. The latter possibly attracted citizens who feel more politically efficacious after the protest, while the former undertook the cost of disrupting socio-economic order.

²⁵Not all the coefficients are precisely estimated due to the small sample size.

²⁶See Figure A4 in appendix A.

²⁷To make the results coherent we also ignore respondents who always voted for the *pro-establishment* camp here.

9 Conclusion

Most anti-regime protests failed to topple the authoritarian incumbents. Yet, seldom could a revolution movement topple a regime in a single popular uprising. Even a failed anti-regime protest may leave a rich legacy for subsequent resistance. In this article, we examine one particular legacy of a failed anti-regime protest: could it at least tip the electoral balance in favor of the opposition? This is a substantively important question, as most authoritarian regimes now hold somewhat competitive elections on a regular basis. The nexus between anti-regime protests and authoritarian elections demands a systematic investigation. In this article, we examine how exposure to a failed anti-regime protest (Hong Kong’s Umbrella Movement) shapes citizens’ attitudes toward opposition politicians. We measure protest exposure by taking advantage of one’s spatial proximity to protest sites, and find that protest exposure is positively correlated with the decline of electoral support for the opposition that organized the anti-regime protest. The cognitive impacts of protest exposure manifest themselves in elevating bystanding citizens’ sense of economic insecurity. In addition, the sense of political efficacy improved significantly after the protest, irrespective of spatial proximity to protest sites. Perhaps for this reason, another massive wave of anti-regime protests broke out in Hong Kong five years after the Umbrella Movement, even though opposition parties were not able to make much of an inroad into the elected offices; Hong Kong people are ready to change politics by taking to the streets, rather than by going to the voting booth.

Our findings have practical implications on anti-regime protests in autocracies. In particular, the opposition elite who organizes anti-regime protests in autocracies should strive to minimize citizens’ perceived socio-economic disruptions of the protest, in order to shore up public support. One way to do it is to reduce the number of protest locations. It is better to organize a large protest in one location, rather than many smaller protests in multiple areas. In addition, the forms and duration of civil resistance also matter. Occupying public areas and obstructing public transport for a lengthy period of time are likely to disrupt socio-economic order more than symbolic public acts such as vigils and performing skits and pranks. That said, anti-regime protests may lack a central authority to exercise control over the duration, locations, and formats of the protest. In fact, the

opposition in authoritarian regimes is always confronted with a dilemma between expanding their coalition and maintaining unity. A larger coalition poses a greater threat against the regime, but diversity within the coalition may foment dissension, which undermines the cohesiveness of the coalition and the effectiveness of the protest.

From the perspective of authoritarian incumbents, it is certainly in their interest to magnify the socio-economic impacts of an anti-regime protest, so that they can incite public resentment against it. This tactic is arguably more useful than relying on sheer coercion to deter ordinary citizens from joining in the protest, although studies of regime dynamics accord a lot more attention to the latter tactic. The threat of state repression only increases the cost of protest participation. It does not make the opposition elite less popular. Disapproval of the protest, however, implies citizens' shared stake in the political status quo. How authoritarian governments manipulate the public perception of anti-regime protests warrants more scholarly attention.

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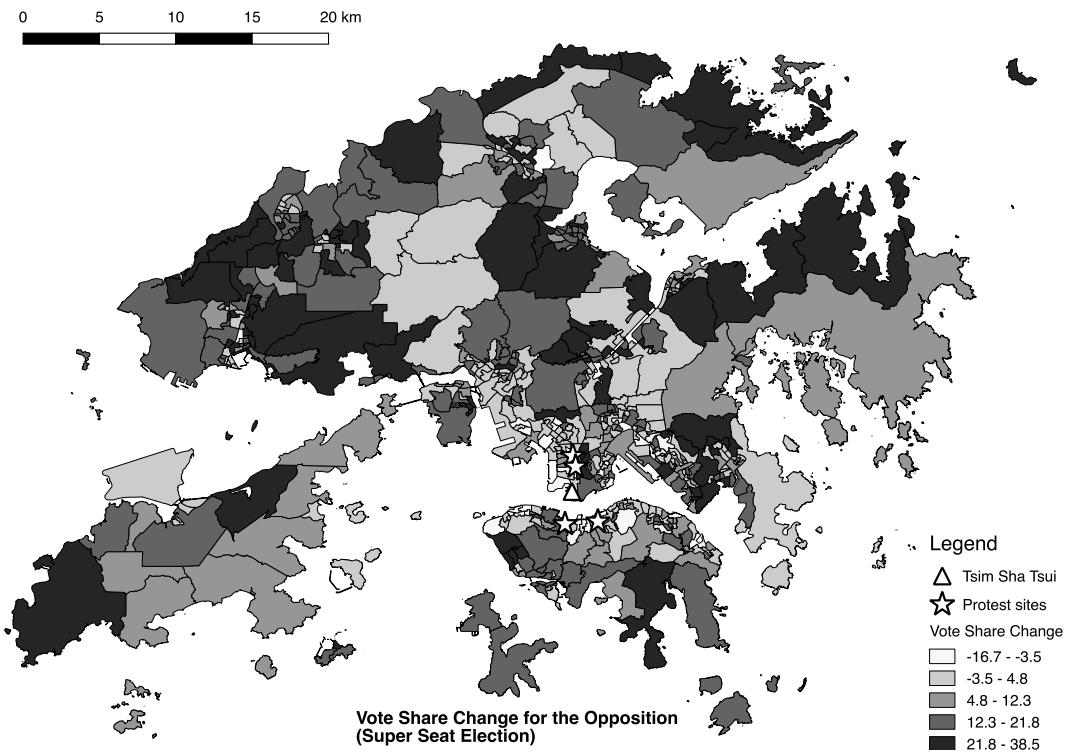
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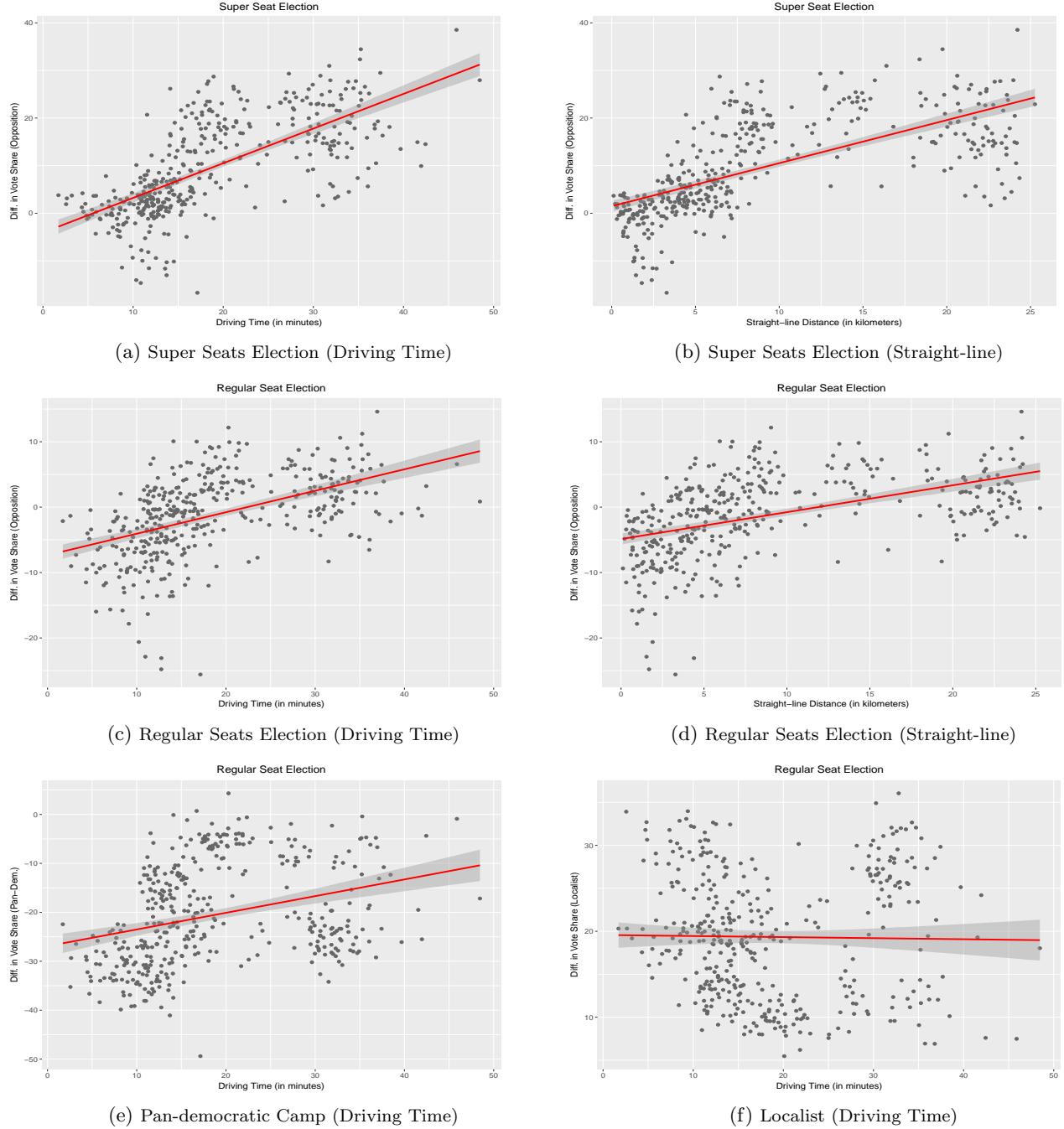
Figures

Figure 1: Vote share change for the opposition in the Legislative Council Election



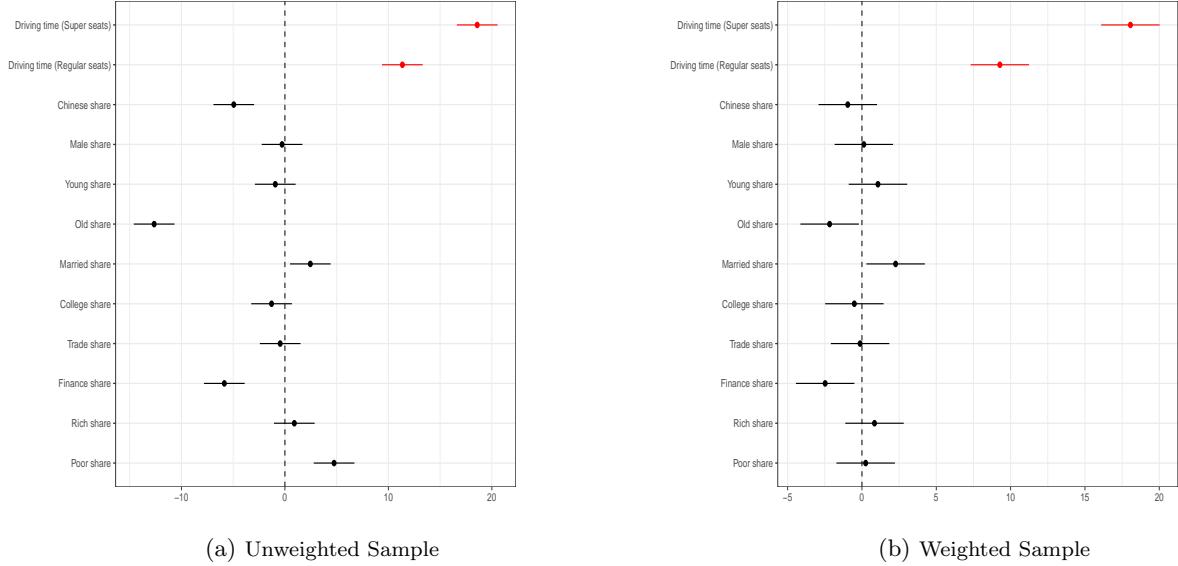
Notes: The map shows the vote share change in each Hong Kong constituency for the opposition between the 2012 and 2016 super seats election. Darker color indicates a larger vote share surge for the opposition.

Figure 2: Relationship between the vote share change of the opposition and proximity to protest sites



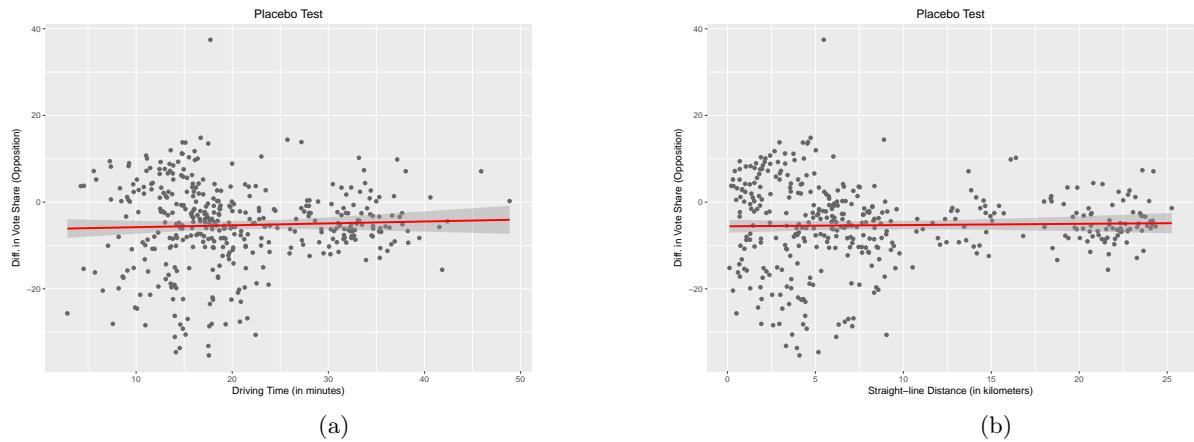
Notes: The figures show how the vote share change of the opposition between the 2012 and 2016 Legislative Council elections varies with the distance to the occupy sites. Each black spot in the graphs represents the vote share change in the corresponding constituency. The red line is the linear fit of the spots, with the grey area indicating its 95% confidence interval. The first two rows are for the super seats and the regular seats election, respectively. The left column uses driving time as the independent variable and the right one uses straight-line distance. The last row plots the vote share change for the *pan-democratic camp* and *localists* between the two regular seats elections.

Figure 3: Results of CBPS weighting



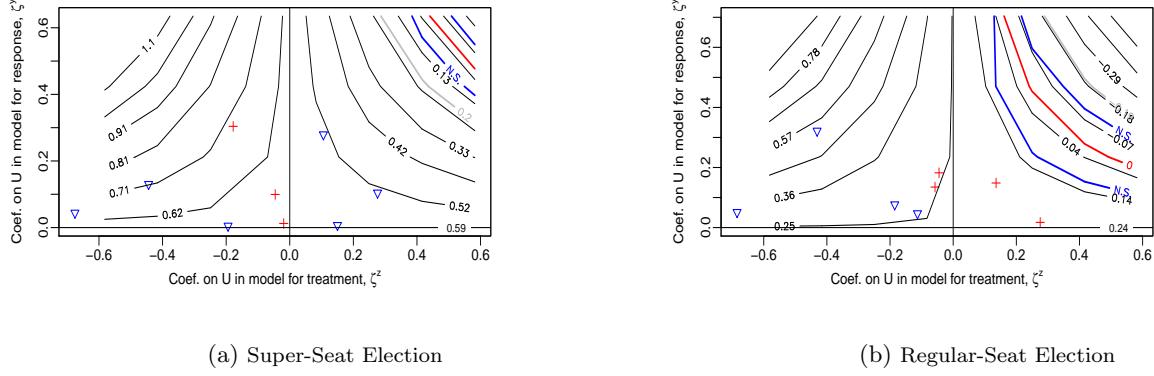
Notes: The figure compares the key independent variable's coefficient (red lines on the top) and its correlation with all the covariates (lines below the red one) in the original unweighted sample (on the left) and in the sample weighted by Covariates Balancing Propensity Score (on the right). The range of each segment represents the estimate's 95% confidence interval.

Figure 4: Placebo Test using elections before the Umbrella Movement



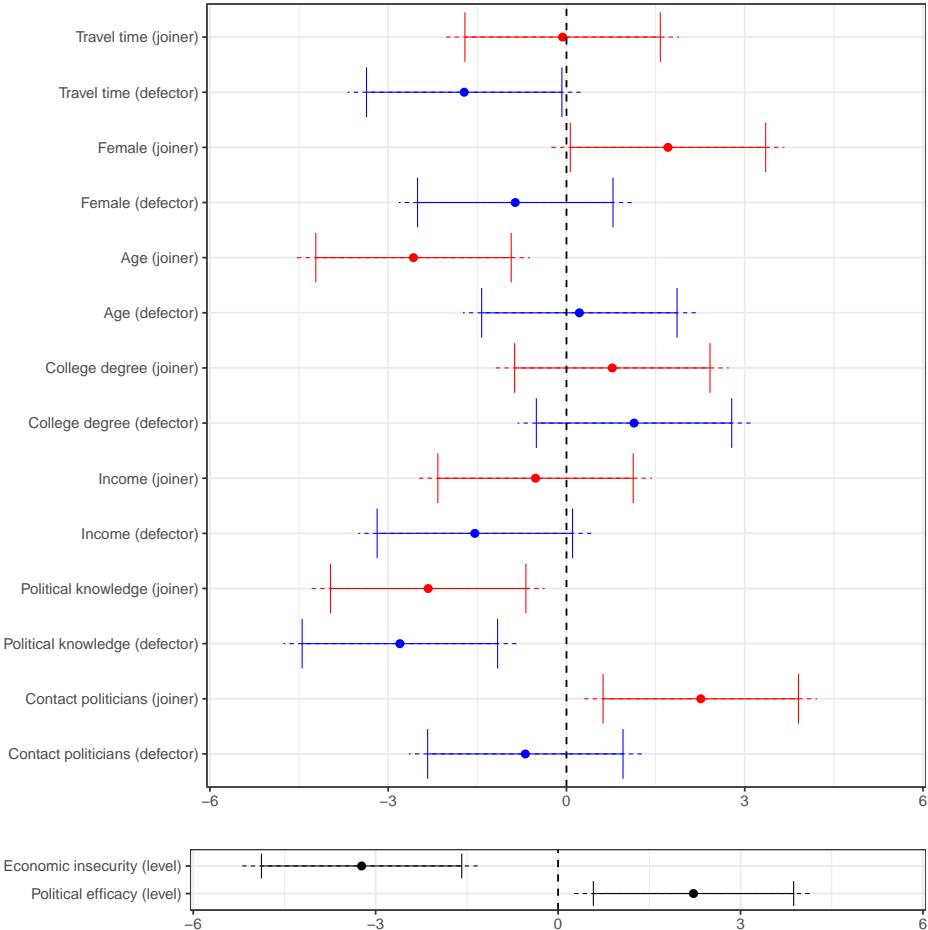
Notes: The two figures present the relationship between the vote share change of the opposition in the two elections before the Umbrella Movement and the distance to the occupy sites. Each black spot in the graphs represents the vote share change in the corresponding constituency. The red line is the linear fit of the spots, with the grey area indicating its 95% confidence interval. The left graph uses driving time as the independent variable and the right one uses straight-line distance.

Figure 5: Results of sensitivity test



Notes: The sensitivity tests follow the approach proposed in Carnegie, Harada, and Hill (2016). The left graph is for the super seats election and the right one is for the regular seats election. The X-axis and Y-axis indicate the correlation of the unobservables with the treatment and the outcome, respectively. Each contour on the graphs reflects the combinations of correlation coefficients that would lead to the same treatment effect estimate (labelled on the contour). The red contours are where the estimated treatment effect becomes zero and the blue contours are where it turns insignificant. Red plus signs and blue triangles give the correlation coefficients of observable covariates with the treatment and the outcome.

Figure 6: Differences among Defectors, Joiners and Stayers



Notes: This upper part of figure depicts the difference of defectors and joiners relative to stayers in nine dimensions. Defectors are voters who voted for the opposition in 2012 but voted for the *pro-establishment camp* in 2016 (marked by blue) and joiners behaved in the opposite way (marked by red). Each point indicates the average difference between this group and stayers (those who didn't change their vote choice between 2012 and 2016). The lower part displays the correlation coefficients of respondents' tendency to vote for the opposition with their perceived economic insecurity and political efficacy. The solid line represents the 95% confidence interval of the difference, and the dotted line represents the 90% confidence interval.

Tables

Table 1: Main results

	<i>Super Seats</i>	<i>Super Seats</i>	<i>Regular Seats</i>	<i>Regular Seats</i>	<i>Pan Dem.</i>	<i>Localist</i>
Driving time * Post Umbrella	0.728*** (0.055)		0.328*** (0.038)		0.341*** (0.068)	-0.012 (0.059)
Straight-line * Post Umbrella		0.905*** (0.077)		0.411*** (0.048)		
Post Umbrella	-4.058*** (1.034)	1.474* (0.750)	-7.343*** (0.844)	-4.878*** (0.632)	-26.916*** (1.378)	19.572*** (1.124)
Constituency FE	Y	Y	Y	Y	Y	Y
N	802	802	802	802	802	802

Notes: The results are from our difference-in-differences estimation based on equation (1). Constituency fixed effects are always controlled. In the first two columns the dependent variable is the vote share for the opposition in the super seats election before and after the Umbrella Movement, and in column three and four it is the vote share for the opposition in the regular seats election in the same era. In column five and six, the dependent variable is the vote share for the *pan-democratic* camp and *localist* in the regular seats election, respectively. Standard errors are clustered at constituency level. *p<0.05; **p<0.01; ***p<0.001.

Table 2: Results on turnout

	<i>Vote Share for the Oppo.</i>		<i>Turnout</i>	<i>Turnout</i>
	<i>Super Seats</i>	<i>Regular Seats</i>	<i>Rate</i>	<i>Rate</i>
Turnout Rate	0.991*** (0.226)	0.212 (0.120)		
Driving time * Post Umbrella			0.039** (0.015)	
Straight-line * Post Umbrella				0.035† (0.018)
Post Umbrella	4.487*** (1.190)	-2.306** (0.705)	4.327*** (0.321)	4.736*** (0.230)

Notes: Dependent variables in the first two columns are the vote share for the opposition in the super and regular seats elections, and the independent variable is the turnout rate in the corresponding year and constituency. In the third column turnout rate is treated as the dependent variable and the independent variable is the interaction term as in Table 2 and 3. Standard errors are clustered at constituency level. †p<0.1; *p<0.05; **p<0.01; ***p<0.001.

Table 3: Alternative dependent variable and standard errors

	<i>Super Seats</i>			<i>Regular Seats</i>		
	<i>Ideology</i>	<i>Larger cluster</i>	<i>Conley</i>	<i>Ideology</i>	<i>Larger cluster</i>	<i>Conley</i>
Driving time * Post Umbrella	0.003*** (0.0003)	0.728*** (0.128)	0.728*** (0.017)	0.0003** (0.0001)	0.328*** (0.079)	0.328*** (0.009)
Post Umbrella	-0.062*** (0.006)	-4.058 (3.115)		-0.016*** (0.003)	-7.343** (2.259)	
Constituency FE	Y	Y	Y	Y	Y	Y
N	802	802	802	802	802	802

Notes: In column one and four, the dependent variable is the average ideological score for each constituency in the 2012 and 2016 elections. The scores are the weighted averages of each candidate's ideal point, where the weight is their vote shares in the constituency. In column two and five, the dependent variables are the same as in Table 2, but the standard errors are clustered at district (there are totally 18 districts in Hong Kong) level instead of constituency level. Spatial HAC standard errors (as known as the Conley standard errors) are reported in column three and six, which account for the spatial intercorrelation among constituencies. Coefficient estimate and standard error for the period dummy are not shown as they are not reported by the R package. *p<0.05; **p<0.01; ***p<0.001.

Table 4A: Mechanisms (perceived economic insecurity)

With Interaction?	Perceived Economic Insecurity		Real Income	
	Yes	No	Yes	No
Driving time * Post Umbrella	-0.026*** (0.004)		-0.008 (0.009)	
Post Umbrella	0.461*** (0.106)	-0.032 (0.076)	0.587** (0.228)	0.430*** (0.121)
District FE	Y	Y	Y	Y
Individual Attributes	Y	Y	Y	Y
N	2,070	2,070	1,857	1,857

Notes: Results in this table are similar to those in Table 5A. In column one and two, the dependent variable is the PCA score for perceived economic insecurity, and in column three and four it is respondents' reported real income level. Standard errors are clustered at district level.
 *p<0.05; **p<0.01; ***p<0.001.

Table 4B: Mechanisms (democratic values and political efficacy)

With Interaction?	Appr. for Democracy		Political Efficacy	
	Yes	No	Yes	No
Driving time * Post Umbrella	-0.003 (0.013)		0.009 (0.014)	
Post Umbrella	-0.202 (0.354)	-0.250 (0.196)	0.103 (0.258)	0.281** (0.104)
District FE	Y	Y	Y	Y
Individual Attributes	Y	Y	Y	Y
N	1,476	1,476	2,035	2,035

Notes: The estimation is based on ABS data, wave 3 and 4. In odd columns, both the interaction of the period dummy and the distance to the occupy sites, and the period dummy are added into the regression. In even columns only the period dummy is included. Dependent variables in all the columns are Principal Component Analysis scores for the corresponding indicator. For each two columns, the indicators are the approval for democracy, and political efficacy, respectively. Standard errors are clustered at district level. *p<0.05; **p<0.01; ***p<0.001.

Table 5: Vote choice of HKES respondents

	Vote for the Oppo.		Whether Voted	
	Yes	No	Yes	No
Driving time * Post Umbrella	0.002* (0.001)		0.001† (0.0005)	
Straight-line * Post Umbrella		0.003* (0.001)		0.001† (0.0005)
Post Umbrella	-0.121*** (0.028)	-0.104*** (0.021)	-0.025† (0.014)	-0.017† (0.009)
Individual FE	Y	Y	Y	Y
N	2174	2174	2174	2174

Notes: The results are based on HKES data. Estimates are generated using the same quasi-differences-in-differences approach. The dependent variable for the first two columns is whether the respondent voted for the opposition in the 2012 and 2016 elections, and for the last two columns it is whether the respondent voted in the two elections. The independent variables are the same proximity measures (although at district level). Individual fixed effects are always controlled. Standard errors are clustered at district level. †p<0.1; *p<0.05; **p<0.01; ***p<0.001.