Persistent Political Engagement: Social Interactions and the Dynamics of Protest Movements

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Abstract

We test whether participation in one protest within a political movement increases subsequent protest attendance, and why. To identify an effect of protest participation, we randomly, indirectly incentivize Hong Kong university students into participation in an antiauthoritarian protest. To identify the effects of social interactions, we randomize the intensity of this treatment across major-cohort cells. We find that experimentally-induced protest participation is significantly associated with protest attendance one year later, though political beliefs and preferences are unaffected. Persistent political engagement is greatest among individuals in the cells with highest treatment intensity, suggesting that social interactions sustain persistent political engagement.

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1 Introduction

Protests demanding political rights have been a critical driver of economic, social, and political change for centuries (e.g., Acemoglu and Robinson, 2012, 2019; Aidt and Franck, 2015). While dramatic, one-shot events capture public attention (e.g., the Hungarian Revolution of 1956, or Tiananmen Square in 1989), political rights have historically often arisen from successful, long-running *movements*: sequences of events in which sustained political engagement is important. Historically important instances include the women's suffrage movements, the US Civil Rights movement, or the anti-Apartheid movement in South Africa.

Political movements have received an enormous amount of attention from across the social sciences (e.g., Tilly, 1978; Skocpol, 1979; McAdam, 1982; Goldstone, 1991; Kuran, 1997). Existing work has argued for the importance of individuals' sustained engagement, working through social structures (Hirschman, 1984; McAdam, 1986; Tarrow, 2005).[1] Up to now, however, there does not exist well-identified, i.e., experimental or quasi-experimental, evidence on the causes of individuals' sustained participation in political movements.

Our paper provides the first such evidence. In addition, we shed light on the underlying mechanisms. To do so, we conduct a field experiment isolating one potential driver of sustained political engagement: past participation in protests causing future participation. We also explore mechanisms that may generate path dependence. Models of protest participation typically emphasize preferences and beliefs (beliefs about the world or others' beliefs about individuals' types) in driving protest turnout.[2] In addition, we focus on the causal role of changed social interactions, given that protests are inherently *group* events (see, e.g., Passarelli and Tabellini, 2017). We ask two research questions: first, does participation in a previous protest make one more likely to participate in a subsequent protest? Second, if so, through which channels — changed beliefs, preferences, or social interactions — does the persistence work?

Our context is Hong Kong's ongoing anti-authoritarian movement, demanding political rights from the Chinese Communist Party (CCP).[3] We study participation in the July 1 marches, yearly protests that represent an important component of Hong Kong's ongoing anti-authoritarian movement. We study the 2017 and 2018 marches: these were peaceful, modestly-sized marches of around 50,000 citizens, aiming both to achieve policy concessions and to signal the strength of the movement.

Such a study faces three identification challenges: first, identifying the causal effect of past protest participation on subsequent action is complicated by the endogeneity of protest participa-

[1] Studying participants in the 1964 Mississippi Freedom Summer project, McAdam (1986, p. 88) writes that, " a prior history of activism and integration into supportive networks acts as the structural 'pull' that encourages the individual to make good on his strongly held beliefs."

[2] E.g., Tullock (1971), Bueno de Mesquita (2010), Shadmehr and Bernhardt (2011), Edmond (2013), or Barberà and Jackson (2019).

[3] We thus contribute to a growing empirical literature on the political economy of popular dissent in the Greater China region: e.g., Lorentzen (2013), Qin et al. (2017), King et al. (2013), and Zhang (2016).

tion. Second, individuals' beliefs and preferences before and after a protest are difficult to observe, preventing an analysis of these mechanisms. Third, variation in social interactions is also typically endogenous, whether driven by political behavior or other factors.

We design a field experiment to overcome these challenges, leveraging our online surveys with students at Hong Kong University of Science and Technology (HKUST; see Cantoni et al., 2016, 2019). The experiment involves two dimensions of randomization: first, at the individual level, we randomly assign subjects to a condition in which they were indirectly incentivized to attend the 2017 march. Second, to generate exogenous variation in social interactions, our design also randomly varies the proportion of treated individuals across major$\times$cohort cells between 0% and 75%. The randomization in treatment intensity across these cells might shape social interactions — and thus protest participation — in 2017, or later. Importantly, these were the only two dimensions of randomization implemented, and both were pre-registered.

We find five main results. First, we find a strong short-run, "first-stage effect" — our indirect incentive generated a 10 percentage point increase in protest turnout in 2017. Second, we identify a strong, significant reduced-form persistence result — our indirect incentive in 2017 generates a 5 percentage point greater turnout rate in July *2018*. Third, we observe only very small treatment effects on political beliefs, preferences and attitudes in the short run, and no statistically significant effects one year after our initial intervention. Fourth, we find substantial heterogeneity in our treatment effect on protest participation in 2018: significant persistence is found specifically among treated individuals in cells assigned to higher treatment intensity (50% or 75% of a cell treated). Fifth, significantly more new political friendships are reported among treated individuals in cells assigned to higher treatment intensity.

The importance of social interactions in motivating persistent political engagement in our setting contrasts with canonical models' focus on (typically Bayesian) belief updating in driving movement dynamics. Our findings also differ from behavioral models that emphasize changed preferences (e.g., models of habit formation). It is important to note that we *cannot* disentangle different channels through which social interactions may shape behavior. Protesters in our setting may simply derive greater social utility from "jointly consuming" protest participation with their politically-active friends (much like people jointly enjoy consuming other activities, from concerts, to sporting events). Protesters may form a political identity that they need to maintain by attending a protest that they expect their politically-active friends to attend. Or, politically-active friends may help individuals coordinate to attend a protest, effectively lowering the cost of attendance.

These results complement research studying the dynamics of mass movements in the *aggregate* (e.g., Biggs, 2005, on labor unrest, and Madestam et al., 2013, on protests) as well as work studying individuals' participation in mass movements as a *one-shot* action: (e.g., Enikolopov et al., 2019, Manacorda and Tesei (2019), González, 2019, Cantoni et al., 2019, and Hager et al., 2019b).[4] Our own previous work (Cantoni et al., 2019) finds that protest participation in the same

[4]Our work is also conceptually related to studies of persistence and social influence in voter behavior (among others,

Hong Kong setting (although a previous protest) is a game of strategic substitutes. This finding occurred within a single protest, when beliefs about the turnout of the broader HKUST student body and the entire Hong Kong population were updated. In contrast to that work, we now study the influence of peers with whom one has relatively strong ties, in a dynamic setting. Our work suggests that strong and weak ties may function differently (Granovetter, 1973): changes in the participation of the population at large will affect a subject's beliefs about the likelihood a discrete public good is produced, or that government crackdown may occur, potentially generating strategic substitutability. In contrast, friends' participation will have a large effect on the social utility derived from protest participation; on the coordination costs of attending; and on social image considerations, potentially generating strategic complementarity.

In what follows, we describe the setting of our experiment and the experimental design in Section 2. We present our results in Section 3, and discuss their interpretation in Section 4. Finally, we offer concluding thoughts in Section 5.

2 Experimental setting and design

2.1 Context: Hong Kong's antiauthoritarian movement and the July 1 marches

In the July 1, 1997, "handover", Hong Kong was transferred from its status as a British colony, with limited democratic political rights but strong protections of civil liberties and respect for the rule of law, to being a Special Administrative Region within the People's Republic of China.[5] The political institutions of Hong Kong are defined by its quasi-constitution — the "Basic Law" — and follow a policy known as "one country, two systems."

The Basic Law left ambiguous several important dimensions that have been bargained over between the so-called "pan-democracy" and "pro-Beijing" camps since the handover. Every year, the confrontation between Hong Kong citizens and the Chinese government culminates in a protest march held on the anniversary of the "handover" on July 1. Those marches have achieved major policy changes; turnout has varied significantly across years, from less than 20,000 to over 500,000. The repeated nature of the July 1 marches — and their organizers' interest in keeping up high rates of repeated participation — is a feature that the Hong Kong antiauthoritarian protests share with many other political movements.

Our experiment is embedded in the July 1 marches of 2017 and 2018. The 2017 march was organized around the mobilization support for recently-formed political parties arising following the Umbrella Revolution. One year later, the defining themes of the march were opposition to the granting of mainland Chinese jurisdiction on Hong Kong territory in the new high-speed

Gerber et al., 2008, Funk, 2010, Fujiwara et al., 2016, DellaVigna et al., 2016, Coppock and Green, 2016, Perez-Truglia and Cruces, 2017, and Hager et al., 2019a).

[5] In Appendix A, we provide a richer description of the political background.

rail station, and a call for the release of human rights activist Liu Xia. In both years, protest participation (around 50,000) was modest by historical standards.

2.2 Overview

Our experimental sample is drawn from among the undergraduate student body at Hong Kong University of Science and Technology (HKUST). We recruit subjects, through a recruitment email sent to the entire HKUST undergraduate student body, to participate in a yearly survey on students' preferences (see Cantoni et al., 2016, 2019 for more details); the response rate lies typically 10% and 20%. The survey wave in June 2017 included around 1,100 subjects. Follow-up emails were subsequently sent to experimental subjects between July 2017 and July 2018.

It is important to discuss the ethical considerations in conducting our study.[6] Our research design is based on a careful assessment of ethics. Here we briefly outline salient aspects: (*i*) IRB approval was received for the study; (*ii*) no minors were able to participate in the study; (*iii*) *ex ante*, we assessed a risk level that was minimal, i.e., not larger "than those ordinarily encountered in daily life of the general population": participation in the July 1 marches is unambiguously legal and was peaceful in all years prior to the study; (*iv*) *ex post*, the assessed risk was minimal, as the marches we studied remained peaceful with *zero* protesters charged for any offenses across the two years studied; (*v*) our experiment was tiny relative to the size of the July 1 marches that we studied, with treatment affecting total turnout by roughly 0.1%.

The timeline of the experiment is as follows (see also Figure 1):

- **June 2017: Baseline survey and assignment of treatment.** We elicit subjects' preferences, beliefs, attitudes; planned and past political behavior; and, we assign and implement the experimental treatments.

- **July 2017: Effect on protests and short-run impacts on beliefs and preferences.** We elicit participation in the 2017 march, as well as political preferences and beliefs (short-run treatment effects). Findings on participation in 2017 can be thought of as a *first-stage* outcome of our intervention. Measured beliefs and preferences capture potential *mechanisms* through which attendance in 2017 can shape protest turnout in 2018.

- **June 2018: Long-run impacts on beliefs and preferences.** We elicit political preferences and beliefs (long-run treatment effects) immediately before the 2018 march. These outcomes again capture potential *mechanisms* shaping protest turnout.

- **July 2018: Persistent effects on protests and social interactions.** We elicit participation in the 2018 march (our *outcome* of interest), as well as information on changed social interactions, i.e. new friendships formed with politically active peers. This represents another

[6] We provide a detailed discussion of ethics and our risk assessment in Appendix B. All experimental materials (recruitment email, treatment prompts, full survey questions) are provided in Appendix D)

potential *mechanism* linking treatment (and protest participation) to persistent political engagement.

In our study we focus on the 849 subjects for whom we have complete data. Fortunately, the attrition rate was quite low, with over 90% retention rates across the multiple waves of the study. In Appendix Table C.3, we present evidence that the sample who complete all of the study waves looks very similar to the sample of individuals who selected out of the study. We also present all of our analyses re-weighting our experimental sample to match the full sample before attrition, and this has virtually no effect on any of our findings.

2.3 Treatment design details

We aimed to encourage protest participation without explicitly paying for turnout — directly paying for turnout could potentially generate a set of compliers very different from the typical protest participants we hoped to study.[7] To generate a strong first stage without paying directly for turnout, we paid for behavior *conditional* on turnout: providing us with information that would help us estimate crowd sizes at the protest.[8]

Specifically, within the online survey, individuals randomly selected to be in the indirect protest incentive treatment group were presented with the following prompt:

> Because many students attend the events of July 1, we are asking a subset of survey participants to help us get a better estimate of the July 1 March attendance. ... We would like to ask you to participate in this scientific endeavor. This should take only 5 minutes of your time while you are at the March. ... Once you have uploaded all the information, we will pay you additional HK$350 for your time and effort.

Subjects in the treatment group received an email the night before the July 1, 2017, march with detailed instructions on how to complete the task. Treated subjects would be able to use a secure link to upload the information we requested. Subjects who uploaded all requested information and completed the protest participation reporting module would be eligible to receive the bonus payment, and we consider them to have taken up the treatment.

We also wanted to control for income effects that might arise from our payment in the treatment condition, perhaps generating feelings of reciprocity or otherwise distorting subsequent survey responses in the treatment group. To do so in a politically neutral way, we designed a "placebo treatment" that indirectly incentivized subjects to engage in a very similar activity — traveling to

[7] "Compliers" in our experiment do not appear to differ significantly from individuals in our sample who had participated in previous protests (Appendix Table C.4).

[8] Estimates of crowd sizes were actually conducted by the research team, contributing evidence to a highly contentious debate in Hong Kong (Lin, 2018). Using data from our experimental subjects, we estimate that the 2017 march was attended by 26,000-37,000 people — quite similar to the Hong Kong University Public Opinion Programme's estimates. Refer to Appendix E for details.

central Hong Kong — for a similar amount of money, but engaging in an activity *unrelated* to politics (and on the weekend after the July 1 march). Rather than paying subjects for helping us estimate crowd size, we pay subjects for helping us estimate metro station crowding. We thereby aim to create a comparison group with identical income effects but no exposure to a political treatment.

Income effects will be comparable between the indirect protest incentive treatment and placebo treatment groups only if take-up rates are similar. As intended, take-up rates in our treatment and placebo treatments were very similar, differing by only around 2 percentage points (Appendix Figure C.1).

In addition to the random assignment of the treatment (and placebo treatment) at the individual level, we also randomize treatment intensity across relevant social networks. We randomly vary the proportion of study participants receiving the treatment (and placebo treatment) across major×cohort cells.[9] At the cell level, the treatment intensity was experimentally assigned at a level of 75% of subjects in around 35% of cells; 50% of subjects in 30% of cells; 1% of subjects in 20% of cells; and 0 subjects treated in 15% of cells.[10] The placebo treatment was assigned at the cell level as follows: 0% of subjects in approximately 40% of cells; 1% of subjects in 30% of cells; 50% of subjects in 25% of cells; and 75% of subjects in 5% of cells. The cell-level intensity of the placebo treatment is cross-randomized with the cell-level intensity of the indirect protest incentive treatment, subject to satisfying the adding-up constraint (for example, we could not have a cell with both 75% treatment and 75% placebo treatment). The result of our cross-randomization was that around 45% of subjects received the indirect protest incentive treatment; 20% received the placebo treatment; and, 35% of subjects were pure controls.

In the Appendix (Tables C.1 and C.2), we present summary statistics and tests of balance at the individual level and at the cell level. We compare subject characteristics across treatment, placebo treatment, and pure control subjects, as well as between the treatment group and a broader "control group" that pools placebo and pure control subjects (this is consistent with our pre-analysis plan and supported by our finding that outcomes are nearly identical for placebo treatment and pure control individuals).

At the individual level, we generally find balance on observables across treatment and control groups, with the exception of gender. At the cell level, we see some systematic differences, with imbalance arising due to our construction of social network cells, which were sometimes defined at the major×cohort×gender level. Random assignment generated several high treatment intensity, all-female cells. To address concerns that imbalance affects our estimated treatment effects,

[9] We aimed for around 100 cells with 10–20 subjects per cell; when major×cohort cells were much bigger or smaller, we adjusted by merging cells (across majors within cohort) or splitting cells (by gender or residential address). Appendix Table C.5 lists the 98 social network cells that we form.

[10] Due to the small cell sizes, the 1% treatment intensity results in cells that have either nobody treated (0%) or one individual treated (producing a treatment intensity of approximately 10%). We discuss the effects of deviations from targeted treatment intensity in additional robustness checks, Appendix Section C.4.

we will control for cell fixed effects and for subject characteristics. In addition, we will control for subject characteristics *interacted* with treatment when analyzing heterogeneous treatment effects associated with cell-level treatment intensity. These analyses suggest that imbalance on observables does not meaningfully affect our results.

3 Results

3.1 Protest turnout in 2017 and 2018

In Figure 2, Panel A, we begin by presenting the short-run (2017) effects of the indirect incentive for protest attendance — the "first stage".[11] In the left-hand graph, one can see that turnout rates in the treatment group were substantially (about 10 percentage points) and statistically significantly higher than in both the pure control and placebo treatment groups. One can also see that protest attendance rates were very similar (and statistically indistinguishable) in the placebo treatment and pure control groups. Any income effects contributing to changed protest participation in 2017 are thus unlikely to be large.[12] To gain power, we pool the pure control and placebo treatment groups into a larger comparison group that for concision we refer to as the "control" group (right-hand graph).

Table 1, column 1, displays the analogous results in regression format. We include treatment cell fixed effects and control for individuals' protest turnout propensity score.[13] Accounting for these controls, regression results suggest around a 10 percentage point increase in 2017 turnout among treated individuals.

We next examine whether the indirect incentive for protest attendance in 2017 generates long-run (i.e., 2018) effects of protest participation. Importantly, neither subjects in the treatment group nor those in the control group received incentives from the study to participate in the march in 2018 — they only differ in whether they were indirectly incentivized to participate in the 2017 march. Figure 2, Panel B, presents the reduced-form results; in the left-hand graph, we display raw attendance rates across treatment arms. Turnout rates remained substantially — around 5 percentage points — and statistically significantly higher in the treatment group, compared to either of the other two control states. Resuls are analogous when considering the pooled control group (right-hand graph). Table 1, column 2, presents regression estimates of the reduced-form treat-

[11] Throughout the analyses presented we conduct two-sided tests for statistical inference. While deviating from the one-sided tests that we pre-registered, this approach is more conservative. As an alternative approach to statistical inference, we also conduct two-sided permutation tests (i.e., "randomization inference") for all specifications shown in the paper, based on 1,000 repetitions and maintaining the same proportion of participants across treatment arms; see Appendix C.

[12] The lack of differences between the placebo and pure control group is also evident in 2018 turnout (see Figure 2, Panel B) and across the entire range of survey questions asked in 2017 and 2018 (see Appendix Table C.18).

[13] We first predict control group individuals' protest turnout in 2017 using a full set of demographics. Then, using the estimated coefficients from this regression, we predict *all* subjects' turnout based on their demographics. This is a parsimonious way of controlling for relevant subject characteristics without losing too many degrees of freedom.

ment effect in 2018, including cell fixed effects and a control for predicted protest participation. We find an approximately 5 percentage point effect of the incentive treatment on 2018 turnout.

In column 3, we estimate the causal effect of 2017 protest attendance on 2018 attendance at the individual level, exploiting variation in 2017 attendance arising from our experimental treatment. Two-stage estimates show a persistence rate of nearly 50%. That is, subjects who were randomly, indirectly incentivized into protest participation in one year are nearly 50% more likely to turnout to protest a full year later when the incentives are no longer in place.[14]

3.2 Beliefs and preferences

What explains the persistent engagement of individuals who turn out to protest due to our experimental intervention? Standard models of protest participation would suggest changes in expected payoffs from participation arising from changed preferences or changed beliefs — the latter of which include beliefs about the political climate and incumbent regime, as well as "strategic" beliefs about other potential protesters. We consider three categories of outcomes.

First, we study subjects' own beliefs about political outcomes, specifically about future political institutions in 2025 and 2050. Second, we study subjects' own political preferences regarding democracy, the CCP's role in Hong Kong, and Hong Kong independence. Third, we study subjects' beliefs about the beliefs and preferences of *other* potential protest participants. Such beliefs about others (second-order beliefs) could plausibly affect strategic considerations in deciding whether to protest.

We summarize outcomes in each of these three categories (own beliefs, own preferences, and beliefs about others) by constructing z-score index variables with larger, positive values indicating more anti-authoritarian responses, weighting by the inverse covariance of standardized variables, following Anderson (2008).[15] We do so separately for outcomes elicited just after the 2017 protest and just before the 2018 protest. This reduces the hypotheses tested to three outcomes at two points in time, as we pre-registered for evaluation. For completeness, we present the treatment effects on all individual outcome variables in Appendix Table C.18, adjusting p-values for multiple hypothesis testing following List et al. (2019).

Figure 3 presents estimated effects of the treatment on subjects' own political beliefs, subjects' own political preferences, and subjects' "strategic" beliefs about others. One can see that differences between treatment and control subjects' own political beliefs and their beliefs about others are small and statistically insignificant just after the 2017 march. These differences practically disappear just before the 2018 march. Political preferences are statistically significantly different between treatment and control subjects just after the 2017 march. Yet, this difference also becomes

[14] We benchmark this experimentally induced persistence rate against the naturally occurring one using data we have collected from the HKUST student panel surveys since 2014. The likelihood that a student participates in a July 1st march in year t, conditional on having participated in year $t-1$, ranges between 24% and 43%, slightly lower but not far from the experimental persistence rate (Appendix Table C.11).

[15] The full text of the survey questions entering the indices is provided in Appendix Section D.1.

small (less than one-tenth of a standard deviation) and is statistically insignificant just before the 2018 march.[16]

We thus see changed beliefs — both regarding the political environment and regarding other citizens in the population — or changed preferences as unlikely to play a large role in driving persistent political engagement in our setting.

As a final approach to studying the role of beliefs and preferences in driving subjects' persistent political engagement, we examine subjects' *plans* to participate in the July 1st march in 2018, as of a week prior to the protest. We view subjects' planned participation as a summary statistic capturing any of our subjects' political attitudes, beliefs, or preferences — including beliefs and preferences along dimensions beyond those about which we asked in our surveys — that could potentially affect turnout. In fact, we find small, statistically insignificant differences in planned turnout between treatment and control subjects (see Appendix Table C.26). To the extent that any changes in preferences and beliefs, or any experimenter demand effects, should map into changes in subjects' plans, our results suggest that treated subjects' higher turnout in 2018 is unlikely to be driven by these mechanisms. Rather, as we discuss below, persistence seems to be driven by a mechanism that allows treated subjects to differentially *convert* their plans into action.

3.3 Social interactions

We next examine the extent to which protest attendance, and in particular, persistent protest attendance among treated subjects, can be attributed to changed social interactions. We exploit the random variation in treatment intensity across major×cohort social network cells to test for heterogeneous treatment effects. Importantly, this is the only dimension of heterogeneity we examine; it is the only dimension of heterogeneity that we included in our pre-analysis plan; and, the variation exploited is experimental.

In Figure 4 we plot turnout rates at the cell level by individual treatment status and by targeted cell treatment intensity, for the 2017 and 2018 protests, respectively. We also plot linearly estimated turnout rates as a function of individual treatment status, cell treatment intensity, and their interaction, for 2017 and 2018. One can see in the left-hand panel that in 2017 turnout rates were significantly higher among treatment group individuals than control, and that the gap in turnout rates between treatment and control subjects was of approximately the same magnitude *regardless* of treatment cell intensity. Any complementarities across treated peers within a social network were not very strong in 2017, nor do there seem to have been large spillovers to untreated subjects. It seems that the treatment affected turnout in 2017 very much at an individual level.

In contrast, one can see in the right-hand panel that in 2018 turnout rates were *differentially* higher among treatment group individuals in treatment cells with the highest treatment intensity. This suggests a crucial complementarity across treated individuals within a major×cohort social

[16]We present the reduced form and two-stage least squares estimates of the treatment's effects on subjects' beliefs and preferences in Appendix Tables C.12–C.16.

network that was activated *after* the 2017 march. The interaction between cell treatment intensity and individual treatment is statistically significant.[17]

The same pattern emerges in regression format, without imposing the parametric assumption that cell treatment intensity linearly affects the individual treatment effect. In Table 1, column 4, we allow treatment to affect protest participation in 2018 differently depending on whether one was in social network cells that have 1%, 50%, or 75% treatment intensities, respectively (1% treated is the omitted category). A concern might be that heterogeneity with respect to unbalanced characteristics, rather than with respect to cell treatment intensity, may drive our findings. We thus control for subjects' predicted protest turnout, interacted with subjects' treatment status, in addition to treatment cell fixed effects.[18] Estimated treatment effects are monotonically increasing across treatment intensity categories, with the treatment effects in the 50% and 75% treated categories significantly greater than the treatment effect in the 1% treated cells.[19]

4 Interpreting treatment effects

4.1 Timing of heterogeneous effects and the importance of new friendships

How might the variation in treatment intensity at the cell level have generated significant interactions with individual treatment status? Several pieces of evidence are suggestive of the importance of *new* friendships formed as a result of march attendance — either at the march itself or thereafter. First, heterogeneity driven by pre-existing friendships among treated subjects (prior to 2017) would have made heterogeneous treatment effects in 2017 more likely. We do not find evidence of these. Second, pre-existing friendships would have been as common between a treated and a control subject as between treated subjects. If attendance in the 2017 march by a treated subject shaped 2018 turnout among her pre-existing friends (i.e., those from before the 2017 march), one should see heterogeneity in turnout rates associated with cell treatment intensity in 2018 *among the control group* as well as the treatment group. The fact that we only see differentially large turnout rates in high treatment intensity cells among *treated* subjects suggests that joint attendance at the 2017 march attendance was crucial in shaping turnout in 2018.

We also directly measure changes in subjects' friendships since the 2017 protest in the July 2018 survey. To test whether new friendships plausibly contributed to the patterns of political engagement observed above, we estimate a regression model analogous to Table 1, column 4, but considering as the outcome subjects' reported new friendships (Table 1, column 5). We find patterns of new friendship formation that correspond quite closely to the patterns of 2018 protest

[17] We present the corresponding linear regression results in Appendix Table C.20.

[18] The results are also robust if we include an interaction between the individual treatment indicator and any of the unbalanced characteristics identified in Table C.2, see Appendix Table C.21.

[19] We consider whether deviations between targeted and actual treatment intensity distort our results (e.g., due to selective attrition). Our findings are robust to using actual intensity and also to re-weighting our observations to account for attrition. See Appendix Section C.4.

attendance: new political friendships are reported significantly more often by treated individuals in the cells with the highest treatment intensity.

Our finding that protest *plans* in the weeks before the 2018 march were not significantly different between treatment and control groups (see Appendix Table C.26) also sheds some light on the role played by social interactions. Similar *planned* turnout rates and different *actual* turnout rates indicate that treated individuals were more likely to convert their plans into action (see Appendix Figure C.7). It is plausible that politically-engaged friendships induce higher turnout particularly through mechanisms that operate during the days very close to the actual protest, or on the day of the protest itself. This may be through providing information about transportation, coordinating turnout times and meeting locations, and perhaps applying social pressure.

4.2 Alternative interpretations

A basic concern regarding self-reported protest participation is that subjects may not report their participation truthfully. This raises the question of whether our findings may be driven by experimenter demand effects. We do not believe this is likely for three reasons. First, in prior research, we conducted list experiments (also known as the "item count technique") suggesting that subjects respond honestly to direct questions about sensitive political topics (see Cantoni et al., 2019, for a discussion). Second, when we ask subjects about their planned participation in the 2018 protest, we do not observe treatment effects — there is no reason why self-reported protest participation should be more distorted by experimenter demand than self-reported plans (arguably less so given higher costs of lying in response to specific questions about past behavior). Third, and crucially, there is no reason why experimenter demand effects should vary with treatment cell intensity.[20]

A second question is whether the treatment effect we observe in 2018 might work through mechanisms other than through protest turnout in 2017. That is, how confident are we in the exclusion restriction implied by our setup? While changes in beliefs, preferences, and social networks resulting from 2017 march attendance are potential *mechanisms* through which protest turnout in 2017 may be linked to turnout in 2018, the exclusion restriction would be violated if treatment had an effect through channels *distinct from* increased participation in 2017. For example, if beliefs, preferences or social interactions were affected by our treatment even in the absence of protest participation by an individual.

As noted above, we do not believe that monetary payments distorted subjects' responses on our surveys. Could beliefs or preferences have shifted among treatment group subjects who did *not* attend the march in 2017 (e.g., due to greater attention paid to the march as a result of our treatment)? This is unlikely: non-participants' beliefs and preferences among treatment group

[20]More generally, we believe that subjects would have reported their protest participation honestly given the fully legal, peaceful nature of the 2017 and 2018 protests.

subjects look nearly identical to those among control group subjects, particularly in June 2018 (see Appendix Figure C.3).

5 Conclusion

We find evidence that individuals' participation in a single protest causally shapes their persistent engagement in a political movement. Persistent engagement in the setting we study is not primarily a result of changed preferences or beliefs, but rather of changed social interactions.

Our findings suggest several directions for future research. First, extending existing dynamic models of protest participation to incorporate social interactions arising from protest participation. Second, identifying the mechanisms through which changed social interactions work: how important are increased joint consumption value from protest participation; changed social image considerations; reduced costs of coordination; or, improved information transmission? More generally, our results highlight a potentially important source of correlated behavior within social networks: not only might information spread across nodes and shape behavior (i.e., due to social learning, as in Banerjee et al., 2013, and González, 2019), but changes in the utility derived from joint consumption or conformity (i.e., social utility, as in Bursztyn et al., 2014) can also generate correlated behavior across connected nodes. The importance of social utility as a complement to social learning in networks deserves further study.

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Figures and tables

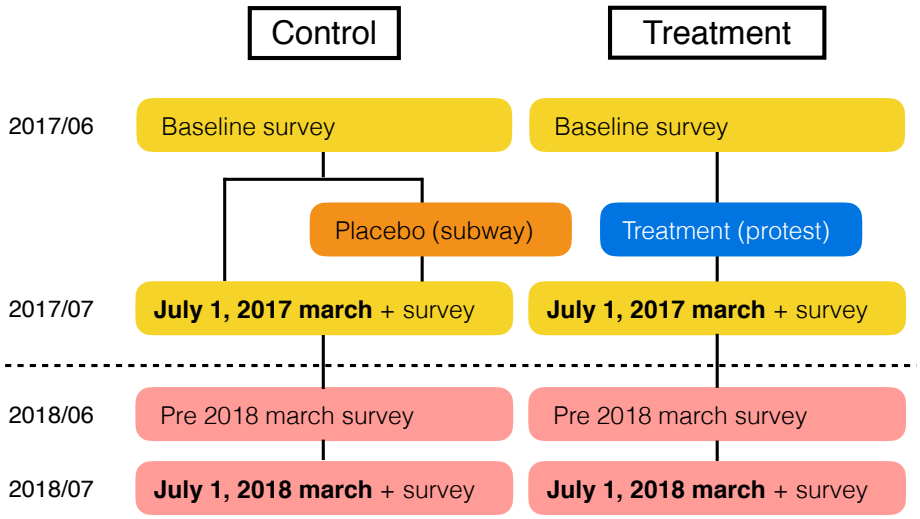
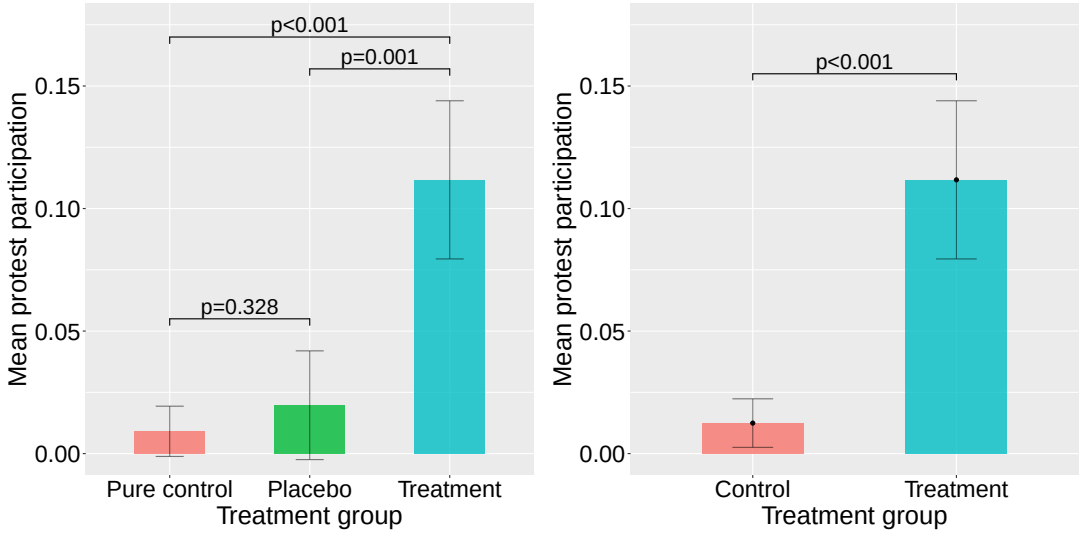


Figure 1: Experimental design

Panel A: First stage



Panel B: Reduced form

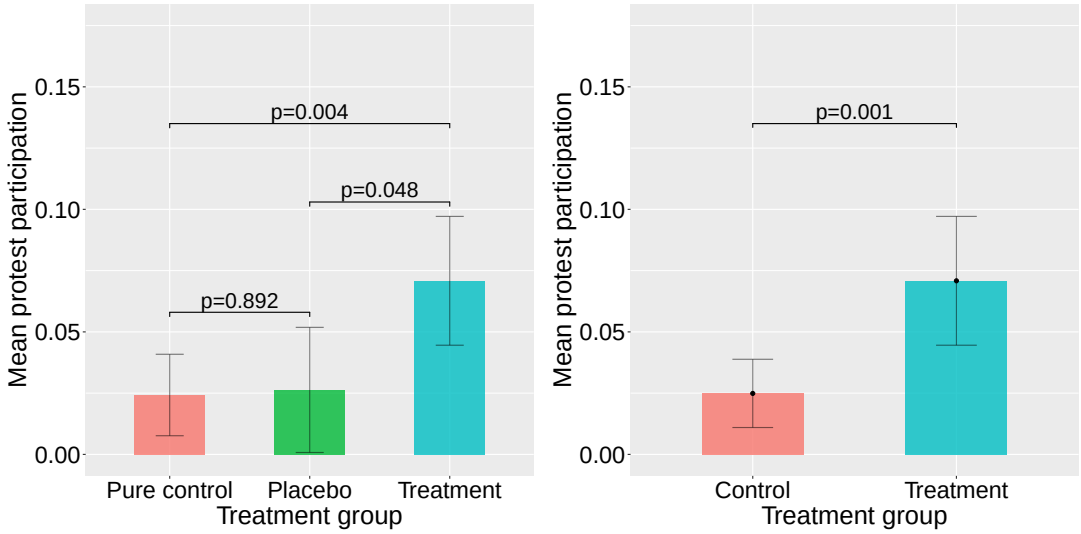


Figure 2: Panel A: Participation in July 1, 2017 protest, by treatment group. Panel B: Participation in July 1, 2018 protest, by treatment group. 95% confidence intervals shown. p-values calculated from pairwise t-tests testing equality of means between conditions.

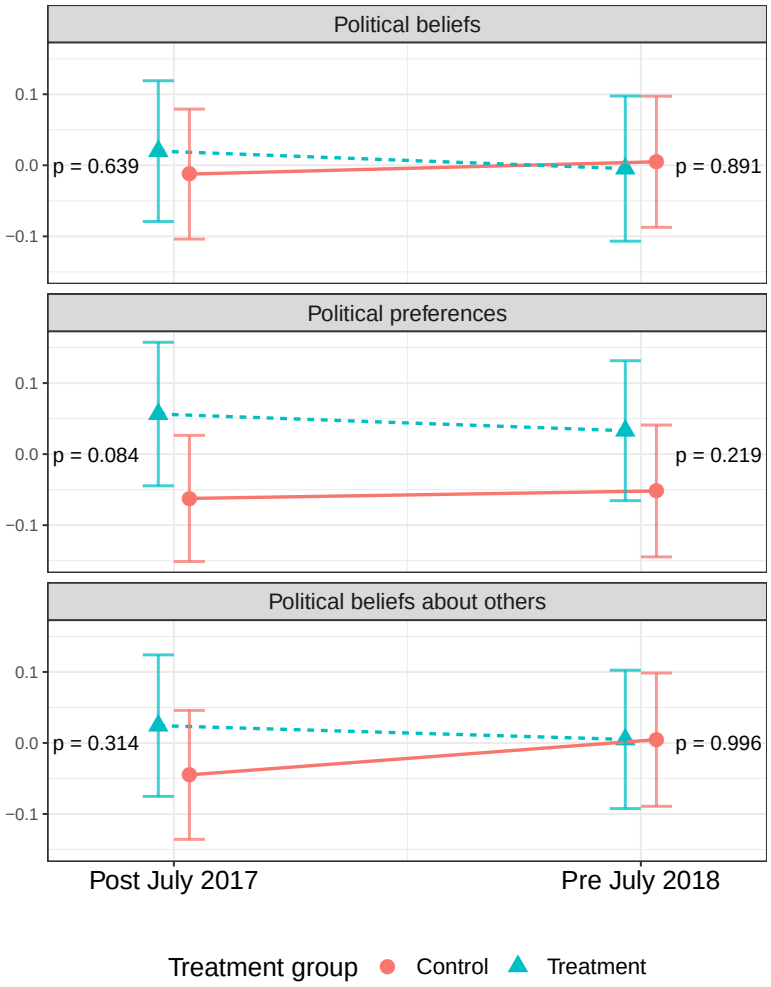


Figure 3: Survey results on beliefs, own political preferences, and second-order beliefs for treatment and control groups in the short run and long run. In each category, survey questions are aggregated to z-score indices, with larger, positive values indicating more anti-authoritarian responses. p-values calculated from pairwise t-tests testing equality of means between treatment and control.

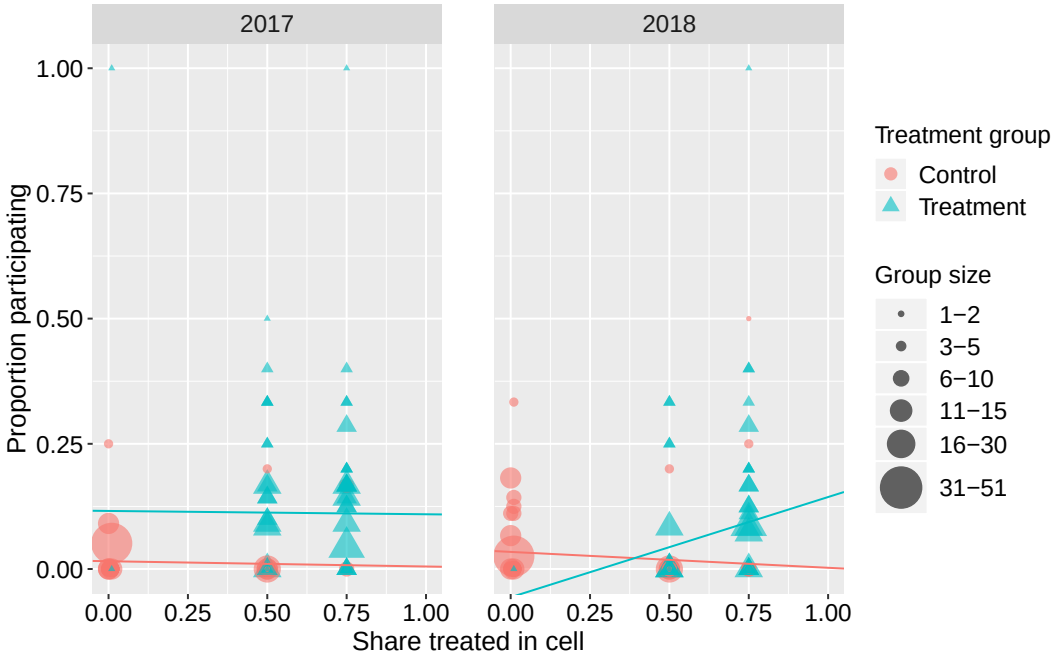


Figure 4: Heterogeneous treatment effects by target cell treatment intensity. p-values calculated from a test that the coefficient on the interaction between individual treatment and cell treatment intensity (graphically, the slope of the line) equals zero: 0.951 (2017, treatment); 0.524 (2017, control); 0.022 (2018, treatment); 0.170 (2018, control).

Table 1: Regression results: First stage, persistence of political participation, friendships

	Protest participation				New friends
	2017	2018	2018	2018	2018
	(1)	(2)	(3)	(4)	(5)
Panel A: *Reduced form*					
Treatment	0.106***	0.050***			
	(0.019)	(0.017)			
Panel B: *Two-stage least squares*					
Participated in 2017			0.467***		
			(0.152)		
Panel C: *Heterogeneity*					
Treatment				−0.046	−0.053
				(0.035)	(0.044)
Treatment × 50 intensity				0.063***	0.075**
				(0.023)	(0.033)
Treatment × 75 intensity				0.118***	0.060
				(0.039)	(0.041)
p-value (Treatment = Treatment × 50)				<0.001	<0.001
p-value (Treatment = Treatment × 75)				0.012	0.003

Notes: Column 1 presents estimates from a regression of 2017 march participation on a treatment dummy, cell fixed effects, and 2017 march attendance propensity score. Column 2 presents estimates from a regression of 2018 march participation on a treatment dummy, cell fixed effects, and 2017 march attendance propensity score. Column 3 presents second-stage estimates from a regression of 2018 march participation on a predicted 2017 march attendance dummy (instrumented with a treatment dummy), cell fixed effects, and 2017 march attendance propensity score. Column 4 presents estimates from a regression of 2018 march participation on a treatment dummy interacted with cell treatment intensity fixed effects (1% treated is the omitted category) and lower-order terms; treatment cell fixed effects; and, 2017 march attendance propensity score interacted with the treatment dummy and lower-order terms. Column 5 presents estimates from a regression of reported new political friendships on a treatment dummy interacted with cell treatment intensity fixed effects (1% treated is the omitted category) and lower-order terms; treatment cell fixed effects; and, 2017 march attendance propensity score interacted with the treatment dummy and lower-order terms. The 2017 march attendance propensity score is constructed by regressing an indicator for planned turnout in 2017 on gender, age, monthly income, expected income at age 40, amount of real estate owned, and an indicator for whether the individual had attended a protest in the past. Standard errors clustered at the treatment cell level. Number of observations for all columns is 849.

SUPPLEMENTARY APPENDIX

Appendix A Political context[1]

A.1 Hong Kong's anti-authoritarian movement

Prior to 1997, Hong Kong was a British colony, with limited democratic political rights, but strong protections of civil liberties and respect for the rule of law. On July 1, 1997, Hong Kong was returned to the People's Republic of China, to be ruled as a Special Administrative Region with its own quasi-constitution — the "Basic Law" — and a promise from China that its institutions would be respected and maintained until 2047, under a policy known as "one country, two systems." The Basic Law left ambiguous several important details that have been bargained and battled over between the so-called "pan-democracy" and "pro-Beijing" camps.

The first ambiguity to generate mass political protests was regarding Article 23 of the Basic Law, which covered the legal regulation of speech and behavior that threatened the government. Under the encouragement of Beijing, a law implementing provisions of Article 23 — the "National Security Bill" — was proposed by the Hong Kong Chief Executive (the head of government) in September 2002, and was seen by many Hong Kong citizens as deeply threatening to their human rights and civil liberties.[2] The proposed legislation catalyzed a massive July 1 march (in 2003) in which an estimated half million people protested. This expression of popular opposition led to the withdrawal of the bill, and no legislation on Article 23 has passed since.

More recently, political conflict has arisen from a second ambiguity in the Basic Law, regarding the method of selection of Hong Kong's Chief Executive. Article 45 of the Basic Law of Hong Kong states the following: "The method for selecting the Chief Executive shall be specified in the light of the actual situation in the Hong Kong Special Administrative Region ... The ultimate aim is the selection of the Chief Executive by universal suffrage upon nomination by a broadly representative nominating committee in accordance with democratic procedures." While indicating an ultimate aim of universal suffrage, the Basic Law does not state *when* elections will be introduced, nor does it clarify the details of nomination. From Hong Kong's return to China until today, the Chief Executive has been selected by an Election Committee, rather than by universal suffrage; currently, the Committee is composed of 1,200 members, and is widely seen as pro-Beijing.

In 2014, the Twelfth National People's Congress proposed an election mode that would have allowed the citizens of Hong Kong a choice between two or three candidates, but these candidates would be selected by the same pro-Beijing committee as before.[3] In response to this limited expansion of democratic rights, a massive July 1 march was mobilized, with hundreds of thousands of citizens taking to the streets. Further escalation and a police crackdown precipitated the even larger-scale "Umbrella Revolution," named for the ubiquitous umbrellas carried by participants. The Umbrella Revolution persisted for months, being slowly cleared out by police by the end of December 2014. While the movement did not alter the policy proposed by Beijing, it did send a clear signal to the Hong Kong legislature (the "LegCo") that a circumscribed change in institutions was unacceptable to the people of Hong Kong. In June 2015, the LegCo struck down the Chinese proposal led by the opposition of the pan-democratic camp.

[1] This description closely follows Cantoni et al. (2019).

[2] For a discussion of these concerns, see the University of Hong Kong's Human Rights Portal Page, "Research on Article 23," online at `https://goo.gl/GdNcHY`, last accessed February 28, 2018.

[3] Refer to `https://goo.gl/0oyNmt`, last accessed February 28, 2018.

Since June 2015, the democratic movement in Hong Kong has both fragmented and radicalized. Recent encroachments on Hong Kong citizens' civil liberties, including the arrest of Hong Kong booksellers by the mainland Chinese government, have deepened some Hong Kong citizens' fear of the CCP and their sense of a Hong Kong identity very much distinct from — even opposed to — that of mainland China. The result is that Hong Kong citizens and political parties are now much more loudly calling for independence or "self determination." "Localist" violence has occasionally flared; new political parties, such as the student-led Demosistō, have formed and won seats in the 2016 LegCo election on platforms explicitly calling for self-determination.[4]

A.2 The July 1 marches: characteristics and achievements

Marches on the anniversary of Hong Kong's handover to China, held each July 1, have been described as "the spirit of democratic struggle in Hong Kong."[5] The July 1 marches have played an important role in Hong Kong citizens' political engagement with the Chinese government, and have achieved major policy changes and even constitutional concessions — particularly when large crowds of protesters were mobilized.[6] Each protest march, while part of a broader anti-authoritarian, democratic movement, is organized around a specific set of issues and policy aims. The first notable achievement came as a response to the CCP's September 2002 proposal for an anti-subversion bill under Article 23, described above. The July 1, 2003, march included around 500,000 people — the largest political gathering in Hong Kong since the Chinese Democracy movement of 1989. Not only was the proposed law withdrawn, but the march eventually forced the resignation of multiple government officials, including the Chief Executive, Tung Chee-hwa.[7]

Another success followed the 2012 march, which included up to 400,000 people, and was part of a mobilization against a CCP proposal for a mandatory "moral and national curriculum" in Hong Kong schools. This proposal, too, was withdrawn shortly after the march. The 2014 march again saw hundreds of thousands of people demanding the popular nomination of Chief Executive candidates in the 2017 election. Although the march did not achieve citizen nomination of Chief Executive candidates, it did produce the massive Umbrella Revolution and led to the rejection of the CCP's proposal for partial democratic rights.

Some characteristics of Hong Kong's July 1 marches may appear idiosyncratic: they are regularly scheduled events and they are largely tolerated by an authoritarian government. In fact, these characteristics appear in other contexts. First, regularly scheduled protests are utilized by many anti-authoritarian movements, from Russia's "Strategy 31" movement demanding rights of assembly to the "Monday demonstrations" in Leipzig that precipitated the fall of the German Democratic Republic.[8] Second, authoritarian regimes are often surprisingly tolerant of protests,

[4]The legislators elected on a self-determination platform were since removed from office on various technicalities regarding their oath-taking, foreshadowing future conflict.

[5]"Sixteen Years of July 1st Marches: A Dynamic History of Hong Kong Citizens' Fight for Democracy," *Initium Media*, June 30, 2018. Available online at `https://goo.gl/8bZDrf` (last accessed July 5, 2018).

[6]A time series of turnout in July 1 marches can be seen in Figure A.1.

[7]In an opinion piece tellingly titled "July 1st March turnout size is absolutely important," former LegCo member Margaret Ng Ngoi-yee writes,"[T]he turnout at the July 1st Marches is absolutely important. If not for 500,000 people taking to the street in 2003, Article 23 would have been legislated already." *The Stand News*, June 29, 2018. Available online at `https://goo.gl/vgP3WP` (last accessed July 5, 2018).

[8]Strategy 31 is discussed in "The Russian protesters who won't give up," by Luke Harding, *The Guardian*, August 30, 2010. Available online at: `https://goo.gl/vfwZro` (last accessed December 9, 2017). Weeks of modestly-sized, regularly-scheduled protests prior to the massive events that led to the fall of the Berlin Wall can be seen in Appendix Figure A.2.

within limits. The "Monday demonstrations" in Leipzig were able to proceed in the late summer and autumn of 1989 despite the obvious feasibility of crackdown.[9] In Russia, protesters recently organized rallies in support of opposition politician Alexei Navalny on Vladimir Putin's 65th birthday, in October 2017, and the *Financial Times* notes that in response to a protest of around 1,000 people in Moscow, "police largely left protesters alone."[10] Even in mainland China, the Communist Party tolerates particular protests (Lorentzen, 2013). In each of these settings, there exists a threat of crackdown *ex ante*, and — including in Hong Kong — police do crack down when protests cross the line.

Thus, like other anti-authoritarian protests, Hong Kong's July 1 marches demand (and occasionally win) fundamental political rights — civil liberties and democratic institutions — from an authoritarian regime. Like other anti-authoritarian protests, turnout is important for success. The importance of protest size can be seen in our survey data: subjects in our experiment believe there is a higher likelihood of protest success if a protest is larger (see Appendix Figure A.3). It can also be seen in the differences between July 1 march organizers' turnout estimates and the turnout estimates of the Hong Kong police. Organizers consistently exceed independent estimates of July 1 march size (and police estimates consistently fall below), with differences between the two reaching the tens or even hundreds of thousands (see Appendix Figure A.1).

Finally, like other anti-authoritarian protests, there is a tail risk of the turnout incurring high personal cost, although the probability is very low. On one hand, Chinese authorities are deeply concerned about political instability in Hong Kong, at least in part because of potential spillovers into mainland China.[11] Thus, beyond the time cost and the experience of heat, humidity, and rain on a Hong Kong summer's day, the concern of the Chinese government implies the potential for high participation costs: the possibility of arrest and forceful police crackdowns using batons and tear gas. On the other hand, we stress that Hong Kong's high level of civil liberty and the explicit protection of public assembly by its Basic Law have made protest demonstrations a tradition of the city. The Hong Kong Government has repeatedly made statements after the July 1st Marches indicating that the "Government respects citizens' rights to assemble, protest, and express their opinions."[12] Among a total of approximately 1,350,000 people who have participated in the July 1st Marches during the past 15 years (2003-2018), 19 individuals were arrested and 5 people were charged for activities during the Marches.[13] Note that 10 of the 15 Marches have 0 arrests and 0 charges at all.

[9] See "A Peaceful Revolution in Leipzig," by Andrew Curry, *Spiegel Online*, October 9, 2009. Available online at: `https://goo.gl/iUakCp` (last accessed December 9, 2017).

[10] Several dozen protesters were detained then released in St. Petersburg, which saw a protest of over 2,000 people. See "Anti-Putin protests mark Russian president's birthday," by Max Seddon and Henry Foy, *Financial Times*, October 7, 2017. Available online at: `https://goo.gl/4oWQzA` (last accessed December 9, 2017).

[11] The Chinese government blocked Instagram — the last major uncensored social media platform available inside the Great Firewall — when the Umbrella Revolution broke out at the end of September 2014 (Hobbs and Roberts, 2018).

[12] Source: Hong Kong Government Newsroom, `https://www.info.gov.hk/gia/general/200807/01/P200807010156.htm` (last accessed December 9, 2017).

[13] Protest turnout counts are based on HKUPOP July 1st Headcounting Project; arrests and convictions are compiled based on comprehensive news reporting archives from the WiseNews database.

A.3 Figures

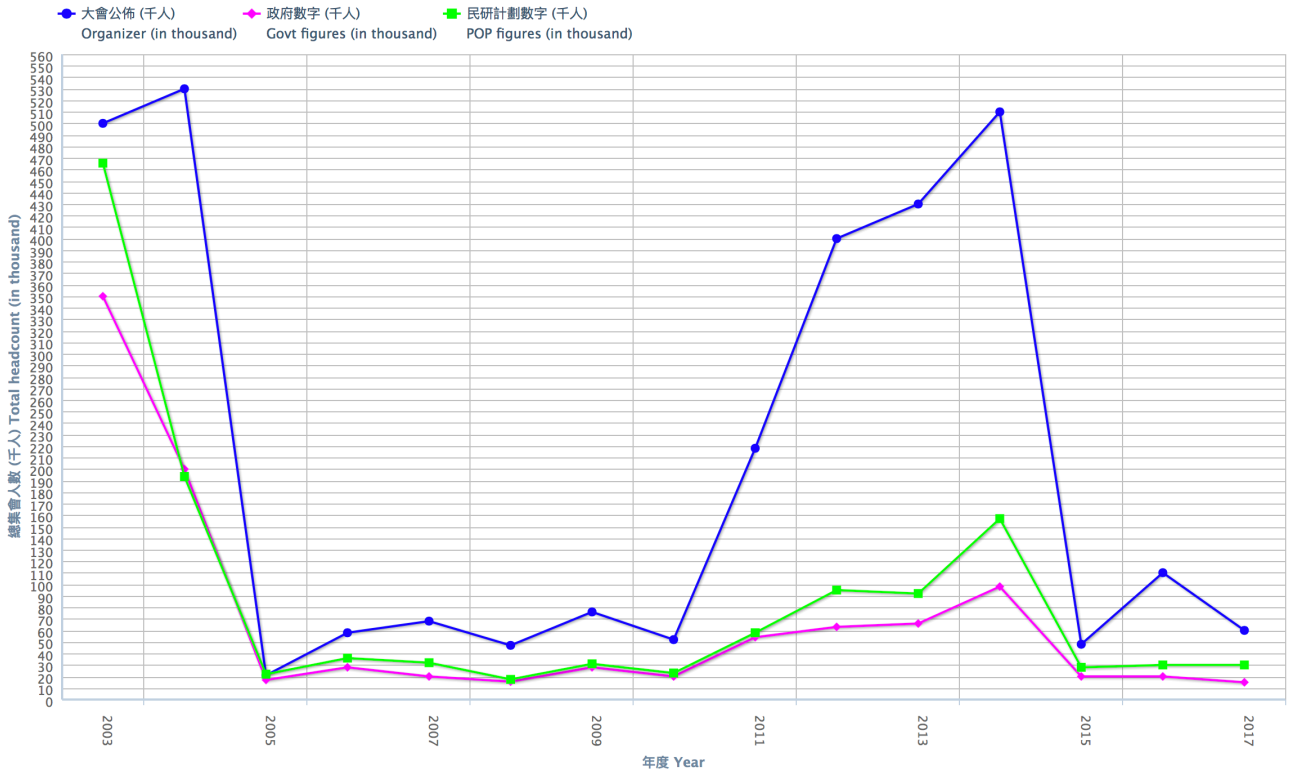


Figure A.1: Turnout at July 1st marches from 2003 to 2017, as counted by the organizers, as reported in government announcements, and as estimated by the Public Opinion Programme at the University of Hong Kong (all in thousands). Reproduced from the Public Opinion Programme, the University of Hong Kong. Source: `https://www.hkupop.hku.hk/english/features/july1/index.html`, last accessed on December 26, 2017. This figure is also shown in Cantoni et al. (2019).

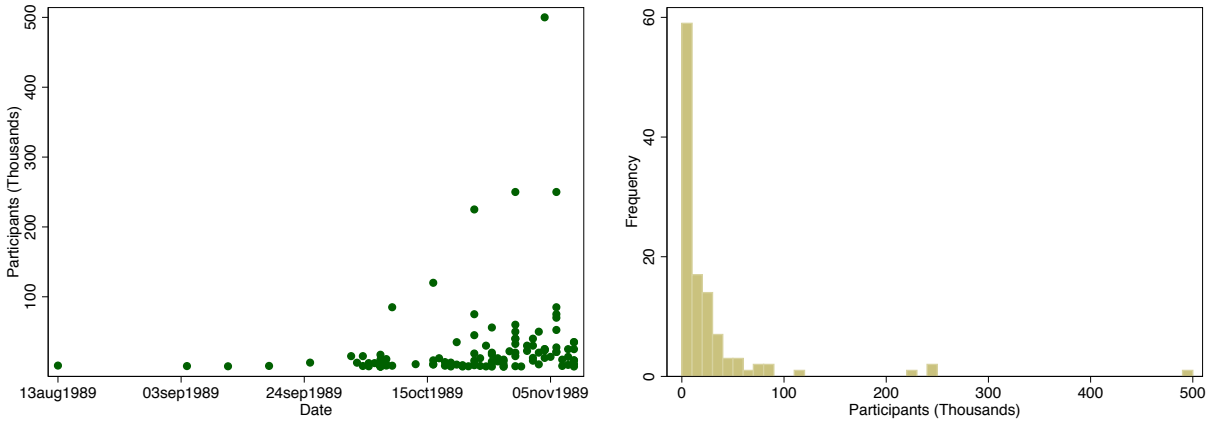


Figure A.2: Protest events in 13 East German district capitals in summer and fall 1989, through November 9, 1989 (when the Berlin Wall fell). Left panel plots individual protests' sizes by date; right panel shows a histogram of protest sizes during the entire time period. When a protest's size is estimated, we take the average of the minimum and maximum estimates. Data come from the Archiv Bürgerbewegung Leipzig. This figure is also shown in Cantoni et al. (2019).

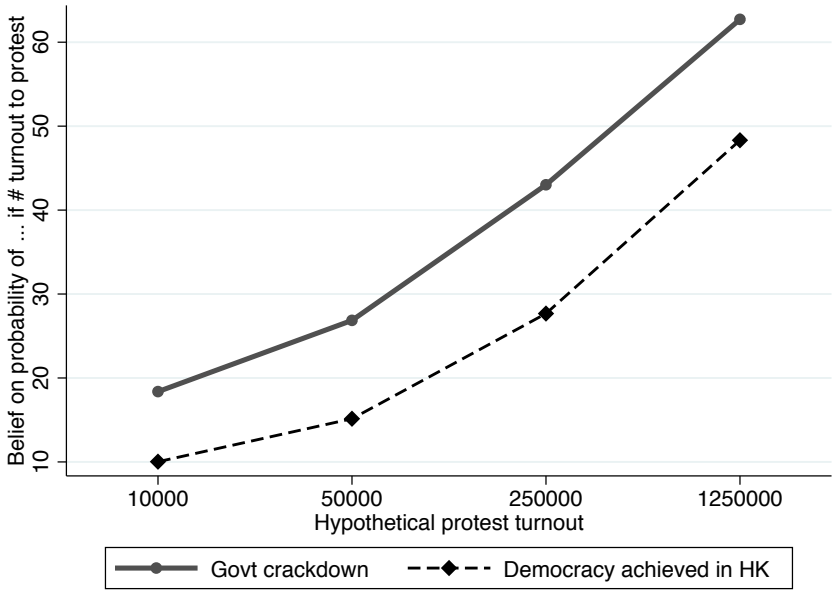


Figure A.3: Students' beliefs regarding the benefits (the chance of achieving democratic institutions in Hong Kong) and costs (the chance of a violent government crackdown) for hypothetical protests with different turnout levels, ranging from 10,000 to 1,250,000 participants. This figure is also shown in Cantoni et al. (2019).

Appendix B Ethical considerations

Our research design is based on a careful assessment of potential risks to our participants. One might have several specific dimensions of concern with the study, which we address in turn:

Underage participants: There are *no* underage participants in our study. We screened out minors in the first step of our online survey.

IRB approval: We sought and obtained approval from four different IRBs: the University of Munich (economics ethics committee, protocol 2017-04), Stanford University (Institutional Review Board, Protocol 38481), the University of California-Berkeley (Committee for Protection of Human Subjects, Protocol ID 2015-05-7571), and Hong Kong University of Science and Technology (Human Participants Research Panel, submission 147). In all of those IRB submissions, we followed all required procedures and answered questions relating all relevant dimensions of concern, including risk. The experimental intervention in 2017 was started only *after* IRB approval. Outcomes and covariates from previous years were collected in the context of our continuing panel survey of Hong Kong students, which has been ongoing since 2016.

Payment: Our participants were paid HKD 350 (approx. USD 45, or EUR 40) for completing either of the two experimental modules. This payment is in line with prevailing wages in Hong Kong, the time commitment expected for completing the task, and our own payments to study participants in previous waves of our HKUST student panel.

Risks: The generally accepted principle for ethics reviews are that risks should be minimal, i.e. not larger "than those ordinarily encountered in daily life of the general population;" moreover, these risks should be reasonable in relation to anticipated benefits. We firmly believe that these criteria are met in relation to participating in Hong Kong's July 1st protest marches.

1. Demonstrations have so far been largely peaceful. No protester outside of a radical group or leadership of the democracy movement has ever been convicted for participating. Demonstrations are an event with broad participation of all strata of society, not just a few radical students. From 2003 until today, a cumulative number of over 1.35 million participants have taken part in the July 1st marches, while the number of individuals arrested, charged or convicted in any given year were, at most, in the single digits (see table on the following page). In 10 out of 15 protests of the past not a single individual was arrested, charged or convicted.

2. The mere fact that thousands of people are participating in protests every year — even hundreds of thousands in some years — shows that these are integral part of the "daily life of the general population."

3. Demonstrations are legal in Hong Kong. Freedom of speech is guaranteed by the current legal system.[1] This is true today, and this was true during 2017–18 when the experiment was conducted.

[1] Article 27 of the Hong Kong Basic Law ("Hong Kong residents shall have freedom of speech, of the press and of publication; freedom of association, of assembly, of procession and of demonstration; and the right and freedom to form and join trade unions, and to strike.") and Articles 16 ("Freedom of opinion and expression") and 17 ("Right of peaceful assembly") of the Hong Kong Bill of Rights.

Discussion: Importantly, this shows how the setting of our experimental intervention differs from mainland China. Freedom House, an independent organization dedicated to the expansion of freedom and democracy around the world, rates Hong Kong's civil liberties as 2 out of 7 (1 = most free, 7 = least free) for the past 10 years, the same score as France. Mainland China, on the other hand, scores 6.[2] The Hong Kong Government has repeatedly made statements after the July 1st Marches indicating that the "Government respects citizens' rights to assemble, protest, and express their opinions."[3]

Our research design illustrates that we anticipated the risks to be low, and, through revealed preference, how study participants themselves assessed the risks as low. We designed a placebo treatment with the hopes of achieving a similar take up rate at the same level of payment. When study participants were offered the exactly same monetary incentives to complete two different tasks — counting crowd size during the protest on July 1st and counting crowd size at the MTR (subway) stations one week later — the shares of students who took up the offers and completed the tasks are very similar (11% and 14%, respectively). This suggests that study participants perceived these two tasks with similar degree of risk.

As in all social science research — from handing out conditional cash transfers, to sending out enumerators to favelas, or community organizers in reconciliation efforts after civil wars — there is always a small risk of bad consequences: in our case, a demonstration turning violent, military crackdown. Our assessment is that is a very unlikely, tail (*"de minimis"*) outcome, under considerable uncertainty. So far, no violent crackdown has ever occurred in Hong Kong's July 1st marches.

[2]Source: `https://freedomhouse.org/report/freedom-world/2019/hong-kong`, last accessed July 23, 2019.

[3]Source: `https://www.info.gov.hk/gia/general/200807/01/P200807010156.htm`, last accessed July 23, 2019.

Summary of arrests, charges and convictions related to July 1 March participants during the Marches since 2003[1]

(as of July 2019)

Year	Number of attendees[2]	Arrested by police	Charged by DOJ	Convicted by court	Reason of arrest/charge/conviction
2003	462,000	1	0	0	Not reported
2004	193,000	0	0	0	
2005	22,000	0	0	0	
2006	36,000	0	0	0	
2007	32,000	0	0	0	
2008	17,000	0	0	0	
2009	34,000	0	0	0	
2010	23,000	0	0	0	
2011	63,000	0	0	0	
2012	95,000	2	2	2	2 protesters were charged with assaulting police officers. 1 was sentenced 21 days of imprisonment and the other was sentenced 6 weeks of imprisonment.
2013	97,000	3	3	3	3 protesters were charged with unlawful assembly and sentenced for 80 hours of community service.
2014	157,000	5 (organizers)	0	0	5 march organizers were arrested on July 4 for violating the assembly permit. None of them were charged as of today.
2015	28,000	0	0	0	
2016	30,000	3	0	0	3 were arrested for possession of weapons. None of them were charged as of today.
2017	30,000	5	0	0[3]	Arrested for common assault, criminal damage, disorder in public places and obstructing public officers.
2018	28,000	0	0	0	

[1] Compiled by reports in HK newspapers. Source: WiseNews database. Note that there were individuals arrested, charged, or convicted for activities on July 1st but outside of the July 1st March activities.
[2] Source: HKUPOP July 1 headcounting project.
[3] Another 8 individuals sabotaging the July 1st March were arrested and charged. 1 was charged for damaging demonstration props; 3 were fined for $1500 each; 4 were sentenced for 18 months of imprisonment with probation; 1 was sentenced for 2 weeks of imprisonment with probation.

Appendix C Additional results: Figures and tables

C.1 Balance and research design

This section presents evidence on balancedness of observable characteristics and about basic elements of our research design. Table C.1 presents evidence on balancedness of observable characteristics across the three treatment arms (pure control, placebo treatment and actual treatment). Table C.2 presents balancedness across the four types of treatment cells (depending on cell-level treatment intensity). Table C.3 presents evidence on attrition across survey waves, starting from the initial sample recruited in June 2017. Table C.4 compares characteristics of protesters in the 2017 treatment group (which in experimental terms would comprise "compliers" and "always-takers") to experimental subjects who reported attendance in older protests. Tables C.5 and **??** list and describe our 97 treatment cells.

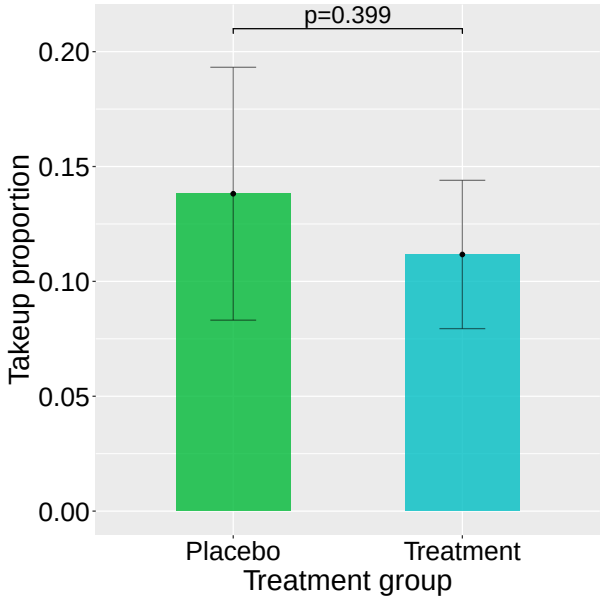


Figure C.1: Take-up proportions for treatment group and placebo treatment group, respectively. 95% confidence intervals shown. p-value calculated from a pairwise t-test of equality of means between placebo and treatment.

Table C.1: Summary statistics and balance check: main treatment vs. placebo vs. pure control

	Overall		Control			Treatment	p-values			
			Pure	Placebo	Both					
	mean	std.dev.	mean	mean	mean	mean	(Pu=Pl)	(Pu=T)	(Pl=T)	(B=T)
Variables:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Male	0.521	0.500	0.591	0.572	0.585	0.436	0.865	0.012	0.238	0.022
Birth year	1997.22	1.44	1997.25	1997.09	1997.20	1997.25	0.600	0.992	0.620	0.779
English language high school	0.794	0.405	0.796	0.789	0.794	0.794	0.861	0.959	0.900	0.987
HH monthly income	27448	16407	27228	26987	27152	27837	0.871	0.617	0.610	0.564
Expected income at age 40	4.41	1.03	4.39	4.42	4.40	4.43	0.761	0.576	0.913	0.648
# real estate owned	0.769	0.945	0.776	0.783	0.778	0.757	0.930	0.807	0.753	0.758
Planned to participate in 2017 protest	0.154	0.361	0.152	0.211	0.170	0.134	0.166	0.525	0.061	0.164
Participated in any previous protest	0.359	0.480	0.336	0.388	0.353	0.368	0.274	0.305	0.654	0.599
# of obs.	849		330	152	482	367	-	-	-	-

Notes: Table presents mean individual characteristics for the entire experimental sample, then presents means for the pure control group, the placebo treatment group, the union of pure control and placebo treatment groups ('control'), and the treatment group, respectively. It then tests for pairwise equality of means between groups. 'English language high school' is an indicator of whether the subject completed high school with English as the formal language of instruction (as opposed to Chinese). 'HH monthly income' is the self-reported total income earned by both parents (including sources of income such as dividends and rents). 'Expected income at age 40' is a survey response indicating self-reported expectations of relative income compared to classmates at HKUST at age 40. '# real estate owned' is a measure of wealth: the number of real estate properties owned by a subject's parents/household in Hong Kong at the time of the survey. 'Planned to participate in 2017 protest' is a subject's self-reported plan (as of June 2017) to participate in the July 1, 2017 march prior to the treatment assignment. 'Participated in any previous protest' is a self-reported indicator for having participated in a protest prior to 2017.

Table C.2: Cell-level summary statistics and balance check

	Overall		0-intensity	1-intensity	50-intensity	75-intensity	p-value
	mean	std.dev.	mean	mean	mean	mean	(0=1=50=75)
Variables:	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Male	0.521	0.500	0.753	0.734	0.414	0.435	0.000
Birth year	1997.22	1.44	1996.80	1997.16	1997.38	1997.24	0.000
English language high school	0.794	0.405	0.831	0.808	0.783	0.786	0.040
HH monthly income	27448	16407	28294	26837	26754	28205	0.595
Expected income at age 40	4.413	1.035	4.400	4.509	4.418	4.359	0.029
# real estate owned	0.769	0.945	0.718	0.815	0.740	0.784	0.436
Planned to participate in 2017 protest	0.154	0.361	0.200	0.168	0.165	0.124	0.452
# of obs	97		13	20	28	36	-

Notes: Table presents mean individual characteristics at the cell level for the entire experimental sample, then presents mean cell characteristics across categories of cell treatment intensity: 0% treated, 1 individual treated, 50% treated, and 75% treated, respectively. It then tests for equality of means across all groups. 'English language high school' is an indicator of whether the subject completed high school with English as the formal language of instruction (as opposed to Chinese). 'HH monthly income' is the self-reported total income earned by both parents (including sources of income such as dividends and rents). 'Expected income at age 40' is a survey response indicating self-reported expectations of relative income compared to classmates at HKUST at age 40. '# real estate owned' is a measure of wealth: the number of real estate properties owned by a subject's parents/household in Hong Kong at the time of the survey. 'Planned to participate in 2017 protest' is a subject's self-reported plan (as of June 2017) to participate in the July 1, 2017 march prior to the treatment assignment. 'Participated in any previous protest' is a self-reported indicator for having participated in a protest prior to 2017.

Table C.3: Attrition across survey parts

	Completed Wave 1		Only wave 1	All waves	
	mean	std.dev.	mean	mean	p-value
Variables:	(1)	(2)	(3)	(4)	(5)
Male	0.512	0.500	0.482	0.521	0.283
Birth year	1997.26	1.40	1997.41	1997.22	0.065
English language high school	0.801	0.399	0.826	0.794	0.290
HH monthly income	27399	16457	27231	27448	0.855
Expected income at age 40	4.40	1.04	4.34	4.41	0.357
# real estate owned	0.771	0.951	0.777	0.769	0.905
Planned to participate in 2017 protest	0.151	0.358	0.138	0.154	0.520
Participated in any previous protest	0.369	0.483	0.401	0.359	0.234
# of obs.	1096		247	849	-

Notes: Table presents mean individual characteristics for the entire sample recruited in 2017. It presents mean individual characteristics first for the sample that completed only Wave 1, then for the sample that completed all waves. It then tests for equality of means between the latter two groups. 'English language high school' is an indicator of whether the subject completed high school with English as the formal language of instruction (as opposed to Chinese). 'HH monthly income' is the self-reported total income earned by both parents (including sources of income such as dividends and rents). 'Expected income at age 40' is a survey response indicating self-reported expectations of relative income compared to classmates at HKUST at age 40. '# real estate owned' is a measure of wealth: the number of real estate properties owned by a subject's parents/household in Hong Kong at the time of the survey. 'Planned to participate in 2017 protest' is a subject's self-reported plan (as of June 2017) to participate in the July 1, 2017 march prior to the treatment assignment.

Table C.4: Evidence on compliers: comparing treatment group protesters to past protesters

	Overall		Past	Treated	
	mean	std.dev.	mean	mean	p-value
Variables:	(1)	(2)	(3)	(4)	(5)
Male	0.552	0.498	0.554	0.537	0.831
Birth year	1997.03	1.44	1997.01	1997.22	0.377
English language high school	0.823	0.382	0.829	0.780	0.447
HH monthly income	28425	17159	28275	29463	0.679
Expected income at age 40	4.38	1.01	4.36	4.51	0.370
# real estate owned	0.831	1.001	0.835	0.805	0.857
Planned to participate in 2017 protest	0.233	0.423	0.235	0.220	0.826
Participated in any previous protest	0.874	0.332	1.000	0.000	0.000
# of obs.	326		285	41	-

Notes: Table studies the characteristics of protesters in the treatment group (taking them as suggestive of the "compliers" in the study, though they also include the "always takers"), comparing these subjects to other experimental subjects who reported attending past protests. The table first presents mean individual characteristics for experimental subjects who either reported previously attending a protest, or who were treatment group protesters in 2017, or both. The table then splits this group, presenting mean individual characteristics for two disjoint sets: (i) experimental subjects who participated in past protests but were *not* treatment group protesters; and (ii) experimental subjects who were treatment group protesters. It then tests for equality of means between groups. 'English language high school' is an indicator of whether the subject completed high school with English as the formal language of instruction (as opposed to Chinese). 'HH monthly income' is the self-reported total income earned by both parents (including sources of income such as dividends and rents). 'Expected income at age 40' is a survey response indicating self-reported expectations of relative income compared to classmates at HKUST at age 40. '# real estate owned' is a measure of wealth: the number of real estate properties owned by a subject's parents/household in Hong Kong at the time of the survey. 'Planned to participate in 2017 protest' is a subject's self-reported plan (as of June 2017) to participate in the July 1, 2017 march prior to the treatment assignment.

Table C.5: Description of social network cells

	Major/program	Cohorts	Gender	Residence	Size	Protest treatment density (%)	Subway placebo density (%)
1	Accounting	2014	Female	All	20	1	0
2	Accounting	2014	Male	All	21	1	50
3	Accounting	2015	Female	All	37	50	1
4	Accounting	2015	Male	All	12	1	50
5	Biochemistry and Cell Biology, Biotechnology, Biological Science	2013	All	All	10	1	50
6	Biochemistry and Cell Biology	2014	Female	All	13	75	0
7	Biochemistry and Cell Biology	2014	Male	All	9	1	50
8	Biochemistry and Cell Biology	2015	Female	All	15	75	0
9	Biochemistry and Cell Biology	2015	Male	All	6	75	0
10	Biological Science, Biotechnology	2014	All	All	20	50	0
11	Biological Science, Biotechnology	2015	Female	All	18	75	0
12	Biological Science, Biotechnology	2015	Male	All	11	50	1
13	Chemistry	2014	Female	All	17	50	0
14	Chemistry	2014	Male	All	6	1	0
15	Chemistry	2015	Female	All	11	50	0
16	Chemistry	2015	Male	All	15	75	1
17	Aerospace Engineering, Civil Engineering, Civil and Environmental Engineering, Environmental Science, Environmental Management and Technology	2013	All	All	20	75	0
18	Aerospace Engineering, Civil Engineering, Civil and Environmental Engineering, Biotechnology and General Business Management	2014	Female	All	5	50	50
19	Aerospace Engineering, Civil Engineering, Civil and Environmental Engineering, Biotechnology and General Business Management	2014	Male	All	30	0	75
20	Aerospace Engineering, Civil Engineering	2015	Female	All	8	0	50
21	Aerospace Engineering, Civil Engineering	2015	Male	All	35	50	0
22	Computer Science, Computer Engineering, Electronic Engineering	2013	Female	All	7	50	50
23	Computer Science, Computer Engineering, Electronic Engineering	2013	Male	All	14	1	0
24	Computer Science	2014	Female	All	7	1	0
25	Computer Science	2014	Male	All	24	1	50
26	Computer Science	2015	Female	All	6	75	0

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	Major/program	Cohorts	Gender	Residence	Size	Protest treatment density (%)	Subway placebo density (%)
27	Computer Science	2015	Male	All	19	1	75
28	Computer Engineering	2014	All	All	18	75	1
29	Computer Engineering, Electronic Engineering	2015	Female	All	6	75	0
30	Computer Engineering, Electronic Engineering	2015	Male	All	24	75	0
31	Electronic Engineering	2014	Female	All	4	50	50
32	Electronic Engineering	2014	Male	All	26	0	75
33	Environmental Science, Environmental Management and Technology	2014	Female	All	9	75	1
34	Environmental Science, Environmental Management and Technology	2014	Male	All	14	75	0
35	Environmental Science, Environmental Management and Technology	2015	Female	All	14	1	50
36	Environmental Science, Environmental Management and Technology	2015	Male	All	8	50	1
37	Accounting, Finance, Global Business, Economics and Finance	2013	Female	All	11	75	0
38	Accounting, Finance, Global Business, Economics and Finance	2013	Male	All	10	50	1
39	Finance, Economics and Finance	2014	Female	All	13	50	50
40	Finance, Economics and Finance	2014	Male	All	24	50	50
41	Finance, Economics and Finance	2015	Female	All	18	1	50
42	Finance, Economics and Finance	2015	Male	All	14	75	1
43	Accounting, Finance, Economics, Economics and Finance	2016	Female	All	19	75	0
44	Accounting, Finance, Economics, Economics and Finance	2016	Male	All	15	0	1
45	Global Business, Economics, General Business Management	2014	All	All	13	75	0
46	Global Business, Economics, World Business, General Business Management	2015	Female	All	17	50	0
47	Global Business, Economics, World Business, General Business Management	2015	Male	All	14	75	0
48	Global Business, General Business Management, Information Systems, Mathematics and Economics, Mathematics, Management, Quantitative Finance, Logistics Management and Engineering and General Business Management	2016	Female	All	12	75	1
49	Global Business, General Business Management, Information Systems, Mathematics and Economics, Mathematics, Management, Quantitative Finance, Logistics Management and Engineering and General Business Management	2016	Male	All	13	75	0
50	Global China Studies	2014	All	All	13	75	1
51	Global China Studies	2015	All	All	15	0	0
52	Logistics Management and Engineering,	2014	All	All	20	0	75

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	Major/program	Cohorts	Gender	Residence	Size	Protest treatment density (%)	Subway placebo density (%)
53	Industrial Engineering and Engineering Management Logistics Management and Engineering, Risk Management and Business Intelligence,	2015	Female	All	11	75	0
54	Industrial Engineering and Engineering Management Logistics Management and Engineering, Risk Management and Business Intelligence,	2015	Male	All	10	1	50
55	Industrial Engineering and Engineering Management Logistics Management and Engineering, Risk Management and Business Intelligence	2016	All	All	15	50	1
56	Industrial Engineering and Engineering Management Information Systems	2014	Female	All	20	50	50
57	Information Systems	2014	Male	All	7	1	75
58	Information Systems	2015	Female	All	20	75	0
59	Information Systems	2015	Male	All	10	50	50
60	Mathematics and Economics, Mathematics, Quantitative Finance	2014	Female	All	9	0	1
61	Mathematics and Economics, Mathematics, Quantitative Finance	2014	Male	All	16	1	1
62	Mathematics and Economics, Quantitative Finance	2015	All	All	15	75	0
63	Marketing	2013	All	All	10	0	1
64	Marketing	2014	Female	All	31	75	1
65	Marketing	2014	Male	All	11	0	1
66	Marketing	2015	Female	All	28	50	0
67	Marketing	2015	Male	All	9	50	0
68	Mathematics	2015	Female	All	7	75	1
69	Mathematics	2015	Male	All	19	0	1
70	Mechanical Engineering	2014	Female	All	9	0	75
71	Mechanical Engineering	2014	Male	All	15	50	50
72	Mechanical Engineering	2015	All	All	20	75	0
73	Operations Management, Management, Information Systems	2013	All	All	10	1	1
74	Operations Management, Management, Logistics Management and Engineering and General Business Management	2014	Female	All	14	75	1
75	Operations Management, Management, Logistics Management and Engineering and General Business Management	2014	Male	All	10	50	1
76	Operations Management, Management	2015	Female	All	16	1	50
77	Operations Management, Management	2015	Male	All	8	0	75

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	Major/program	Cohorts	Gender	Residence	Size	Protest treatment density (%)	Subway placebo density (%)
78	Risk Management and Business Intelligence	2014	All	All	13	75	0
79	Business and Management (undeclared)	2015	All	All	12	75	0
80	Marketing, Business and Management (undeclared)	2016	Female	Off campus	68	50	50
81	Marketing, Business and Management (undeclared)	2016	Female	On campus	16	75	1
82	Marketing, Business and Management (undeclared)	2016	Male	Off campus	37	50	0
83	Marketing, Business and Management (undeclared)	2016	Male	On campus	14	75	0
84	Chemical Engineering, Chemical and Biomolecular Engineering, Engineering (undeclared), Individualized Interdisciplinary Major, Others	2015	Female	All	11	50	1
85	Chemical Engineering, Chemical and Biomolecular Engineering, Engineering (undeclared), Individualized Interdisciplinary Major, Others	2015	Male	All	11	50	0
86	Electronic Engineering, Computer Engineering, Computer Science and General Business Management, Civil Engineering and General Business Management, Chemical and Environmental Engineering, Engineering (undeclared)	2016	Female	All	36	50	50
87	Electronic Engineering, Computer Engineering, Computer Science and General Business Management, Civil Engineering and General Business Management, Chemical and Environmental Engineering, Engineering (undeclared)	2016	Male	Off campus	74	1	50
88	Electronic Engineering, Computer Engineering, Computer Science and General Business Management, Civil Engineering and General Business Management, Chemical and Environmental Engineering, Engineering (undeclared)	2016	Male	On campus	21	1	1
89	Physics, Science (undeclared)	2015	All	All	19	75	0
90	Chemistry, Physics, Environmental Science, Environmental Management and Technology, Science (undeclared)	2016	Female	Off campus	49	75	0
91	Chemistry, Physics, Environmental Science, Environmental Management and Technology, Science (undeclared)	2016	Female	On campus	17	50	50
92	Chemistry, Physics, Environmental Science, Environmental Management and Technology, Science (undeclared)	2016	Male	Off campus	39	75	0
93	Chemistry, Physics, Environmental Science, Environmental Management and Technology, Science (undeclared)	2016	Male	On campus	8	50	0
94	Chemistry, Chemical Engineering, Chemical and Environmental Engineering, Mathematics and Economics, Mathematics, Quantitative Finance, Physics,	2013	Male	All	15	75	0

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	Major/program	Cohorts	Gender	Residence	Size	Protest treatment density (%)	Subway placebo density (%)
	Logistics Management and Engineering, Industrial Engineering and Engineering Management and General Business, Global China Studies, Engineering (undeclared), Science (undeclared), Business and Management (undeclared), Others						
95	Biotechnology, Chemical and Biomolecular Engineering, Chemical Engineering, Chemical and Environmental Engineering, Physics, Engineering (undeclared), Science (undeclared), Others	2014	Female	All	11	1	50
96	Biotechnology, Chemical and Biomolecular Engineering, Chemical Engineering, Chemical and Environmental Engineering, Physics, Engineering (undeclared), Science (undeclared), Others	2014	Male	All	13	75	0
97	Global China Studies, Individualized Interdisciplinary Major, Others	2016	All	All	18	0	1

Table C.6: List of treatment cells

	Name	Size	# treated	Empirical intensity	Target intensity	2017 turnout	2018 turnout
1	ACCT-2014-F	10	0	0.00	1.00	0	0
2	ACCT-2014-M	12	0	0.00	1.00	0	0
3	ACCT-2015-F	25	13	52.00	50.00	0	0
4	ACCT-2015-M	10	0	0.00	1.00	0	0
5	BCB-2013	5	0	0.00	1.00	0	0
6	BCB-2014-F	5	4	80.00	75.00	0	0
7	BCB-2014-M	5	0	0.00	1.00	0	0
8	BCB-2015-F	9	5	55.56	75.00	0	0
9	BCB-2015-M	3	2	66.67	75.00	0	0
10	BISC-2014	9	3	33.33	50.00	0	1
11	BISC-2015-F	12	8	66.67	75.00	1	2
12	BISC-2015-M	6	4	66.67	50.00	0	0
13	CHEM-2014-F	9	7	77.78	50.00	1	0
14	CHEM-2014-M	3	0	0.00	1.00	0	0
15	CHEM-2015-F	9	5	55.56	50.00	2	0
16	CHEM-2015-M	11	8	72.73	75.00	1	0
17	CIVL-2013	6	3	50.00	75.00	0	0
18	CIVL-2014-F	3	2	66.67	50.00	0	0
19	CIVL-2014-M	15	0	0.00	0.00	0	1
20	CIVL-2015-F	4	0	0.00	0.00	1	0
21	CIVL-2015-M	20	11	55.00	50.00	1	0
22	COMP-2013-F	3	1	33.33	50.00	0	0
23	COMP-2013-M	5	1	20.00	1.00	0	0
24	COMP-2014-F	2	0	0.00	1.00	0	0
25	COMP-2014-M	10	0	0.00	1.00	0	0
26	COMP-2015-F	4	4	100.00	75.00	0	0
27	COMP-2015-M	10	1	10.00	1.00	0	1
28	CPEG-2014	7	6	85.71	75.00	1	1
29	CPEG-2015-F	2	1	50.00	75.00	0	0
30	CPEG-2015-M	11	7	63.64	75.00	2	2
31	ELEC-2014-F	2	0	0.00	50.00	0	0

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Table C.6 – continued from previous page.

	Name	Size	# treated	Empirical intensity	Target intensity	2017 turnout	2018 turnout
32	ELEC-2014-M	12	0	0.00	0.00	0	0
33	ENVS-2014-F	5	5	100.00	75.00	0	1
34	ENVS-2014-M	8	5	62.50	75.00	1	1
35	ENVS-2015-F	9	1	11.11	1.00	0	0
36	ENVS-2015-M	6	3	50.00	50.00	0	0
37	FINA-2013-F	5	2	40.00	75.00	2	2
38	FINA-2013-M	5	1	20.00	50.00	0	0
39	FINA-2014-F	4	2	50.00	50.00	0	0
40	FINA-2014-M	13	7	53.85	50.00	1	0
41	FINA-2015-F	9	1	11.11	1.00	0	1
42	FINA-2015-M	8	6	75.00	75.00	1	1
43	FINA-2016-F	13	9	69.23	75.00	0	1
44	FINA-2016-M	9	0	0.00	0.00	0	1
45	GBUS-2014	8	6	75.00	75.00	1	0
46	GBUS-2015-F	14	7	50.00	50.00	0	0
47	GBUS-2015-M	8	5	62.50	75.00	2	2
48	GBUS-2016-F	5	2	40.00	75.00	0	0
49	GBUS-2016-M	6	5	83.33	75.00	1	1
50	GCS-2014	7	5	71.43	75.00	0	0
51	GCS-2015	5	0	0.00	0.00	0	0
52	IELM-2014	6	0	0.00	0.00	0	0
53	IELM-2015-F	7	4	57.14	75.00	0	0
54	IELM-2015-M	3	0	0.00	1.00	0	1
55	IELM-2016	6	3	50.00	50.00	1	0
56	IS-2014-F	12	6	50.00	50.00	1	0
57	IS-2014-M	4	1	25.00	1.00	0	0
58	IS-2015-F	9	7	77.78	75.00	1	0
59	IS-2015-M	5	2	40.00	50.00	1	0
60	MAEC-2014-F	2	0	0.00	0.00	0	0
61	MAEC-2014-M	10	1	10.00	1.00	0	0
62	MAEC-2015	8	5	62.50	75.00	0	0

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Table C.6 – continued from previous page.

	Name	Size	# treated	Empirical intensity	Target intensity	2017 turnout	2018 turnout
63	MARK-2013	4	0	0.00	0.00	0	0
64	MARK-2014-F	19	14	73.68	75.00	2	1
65	MARK-2014-M	5	0	0.00	0.00	0	0
66	MARK-2015-F	18	10	55.56	50.00	1	0
67	MARK-2015-M	6	3	50.00	50.00	1	0
68	MATH-2015-F	4	3	75.00	75.00	1	1
69	MATH-2015-M	11	0	0.00	0.00	1	2
70	MECH-2014-F	2	0	0.00	0.00	0	0
71	MECH-2014-M	9	5	55.56	50.00	0	0
72	MECH-2015	15	11	73.33	75.00	1	0
73	OM-2013	5	0	0.00	1.00	0	0
74	OM-2014-F	6	3	50.00	75.00	0	0
75	OM-2014-M	4	2	50.00	50.00	0	0
76	OM-2015-F	7	0	0.00	1.00	0	1
77	OM-2015-M	3	0	0.00	0.00	0	0
78	RMBI-2014	8	6	75.00	75.00	1	1
79	SBM-2015	4	3	75.00	75.00	0	0
80	SBM-2016-F-Off	29	12	41.38	50.00	2	0
81	SBM-2016-F-On	6	4	66.67	75.00	0	0
82	SBM-2016-M-Off	25	12	48.00	50.00	1	1
83	SBM-2016-M-On	7	5	71.43	75.00	1	2
84	SENG-2015-F	6	4	66.67	50.00	1	1
85	SENG-2015-M	8	6	75.00	50.00	0	0
86	SENG-2016-F	16	6	37.50	50.00	0	0
87	SENG-2016-M-Off	40	1	2.50	1.00	3	1
88	SENG-2016-M-On	10	1	10.00	1.00	0	0
89	SSCI-2015	12	8	66.67	75.00	0	1
90	SSCI-2016-F-Off	30	23	76.67	75.00	1	2
91	SSCI-2016-F-On	9	4	44.44	50.00	2	2
92	SSCI-2016-M-Off	18	12	66.67	75.00	3	1
93	SSCI-2016-M-On	4	3	75.00	50.00	1	1

Continued on next page.

Table C.6 – continued from previous page.

	Name	Size	# treated	Empirical intensity	Target intensity	2017 turnout	2018 turnout
94	Others-2013-M	7	6	85.71	75.00	0	0
95	Others-2014-F	4	0	0.00	1.00	0	0
96	Others-2014-M	3	3	100.00	75.00	1	0
97	Others-2016	7	0	0.00	0.00	0	0

Notes: Table lists all treatment cells, including cell size, number in the cell who received the main treatment, the empirical treatment intensity (# treated/size), the target treatment intensity (1, 50, or 75), turnout in 2017, and turnout in 2018. All columns include only participants who completed all waves of the study.

C.2 First stage and persistence results

This section presents supplementary regression tables and robustness checks relating to the first-stage effects (turnout in 2017) and on the persistence of the experimental treatment (turnout in 2018).

Table C.7 presents regression evidence of the treatment effect on turnout in 2017 (column 3 corresponds to the result in Table 1, column 1). Table C.8 reproduces the same setup, but observations in the regression are weighted to match the sample of individuals who completed at least one wave of the study on observables.

Table C.9 presents evidence of a treatment effect on turnout in 2018, both as reduced-form evidence (Panel A) and as 2SLS results, where participation in 2018 is regressed on participation in 2017, instrumented with the treatment indicator (Panel B). Results in column 3, panels A and B, correspond to Table 1, columns 2 and 3, respectively. Table C.10 reproduces the same regressions in a weighted OLS setup.

Table C.11 estimates the "naturally occurring" persistence rate, as resulting from a simple regression of (self-reported) participation in year t on participation in year $t-1$. One might also wish to benchmark the persistence rate we find against rates of persistence observed in other settings (sporting events, concerts, etc.). In this work, our aim is to test for a meaningful effect of past protest behavior on future behavior (i.e., testing the effect of past participation against 0) and to test for meaningful roles of belief changes, preference changes, and changed social interactions (i.e., comparing these mechanisms' effects to 0). Comparing the magnitudes within this setting to analogous magnitudes in other settings is left for future work.

Table C.7: Effects on turnout

	Participated July 1, 2017		
	(1)	(2)	(3)
Treatment	0.099***	0.107***	0.106***
	(0.014)	(0.019)	(0.019)
p-value (permutation test)	0.000	0.000	0.000
Treatment cell FEs	No	Yes	Yes
Control for predicted protest participation	No	No	Yes
Observations	849	849	849
DV mean (control grp.)	0.012	0.012	0.012
DV std. dev. (control grp.)	0.111	0.111	0.111
DV mean (all)	0.055	0.055	0.055
DV std. dev. (all)	0.229	0.229	0.229

Notes: Table reports estimated coefficients from regressions of protest turnout in July 2017 on a treatment indicator (the omitted control group is the union of the placebo treatment and pure control groups). Column 2 includes controls for a full set of treatment cell fixed effects. Column 3 further includes a control for predicted protest participation. Predicted protest participation is constructed by regressing an indicator for planned turnout in 2017 on gender, age, monthly income, expected income at age 40, amount of real estate owned, and an indicator for whether the individual had attended a protest in the past. Standard errors clustered at the treatment cell level.

Table C.8: Effects on turnout (reweighted sample)

	Participated July 1, 2017		
	(1)	(2)	(3)
Treatment	0.098***	0.106***	0.105***
	(0.014)	(0.018)	(0.019)
p-value (permutation test)	0.000	0.000	0.000
Treatment cell FEs	No	Yes	Yes
Control for predicted protest participation	No	No	Yes
Observations	849	849	849
DV mean (control grp.)	0.013	0.013	0.013
DV std. dev. (control grp.)	0.112	0.112	0.112
DV mean (all)	0.055	0.055	0.055
DV std. dev. (all)	0.228	0.228	0.228

Notes: Table reports estimated coefficients from regressions of protest turnout in July 2017 on a treatment indicator (the omitted control group is the union of the placebo treatment and pure control groups). Column 2 includes controls for a full set of treatment cell fixed effects. Column 3 further includes a control for predicted protest participation. Predicted protest participation is constructed by regressing an indicator for planned turnout in 2017 on gender, age, monthly income, expected income at age 40, amount of real estate owned, and an indicator for whether the individual had attended a protest in the past. Standard errors clustered at the treatment cell level. Observations re-weighted to match the sample of individuals who completed at least one wave of the study on observables.

Table C.9: Persistent effects on participation

	Participated July 1, 2018		
Panel A: *Reduced form*			
Treatment	0.046***	0.050***	0.050***
	(0.014)	(0.017)	(0.017)
p-value (permutation test)	0.002	0.009	0.008
Panel B: *Two-stage least squares*			
Participated July 1, 2017	0.463***	0.466***	0.467***
	(0.134)	(0.151)	(0.152)
Treatment cell FEs	No	Yes	Yes
Control for predicted protest participation	No	No	Yes
Observations	849	849	849
DV mean (control grp.)	0.025	0.025	0.025
DV std. dev. (control grp.)	0.156	0.156	0.156
DV mean (all)	0.045	0.045	0.045
DV std. dev. (all)	0.207	0.207	0.207

Notes: Panel A reports estimated coefficients from regressions of protest turnout in July 2018 on a treatment indicator (the omitted control group is the union of the placebo treatment and pure control groups). Panel B reports estimated coefficients from two-stage least squares regressions of protest turnout in July 2018 on an indicator of protest turnout in July 2017, with the latter instrumented in the first stage with the treatment indicator. Column 2 includes controls for a full set of treatment cell fixed effects. Column 3 includes controls for a full set of treatment cell fixed effects and a control for predicted protest participation. Predicted protest participation is constructed by regressing an indicator for planned turnout in 2017 on gender, age, monthly income, expected income at age 40, amount of real estate owned, and an indicator for whether the individual had attended a protest in the past. Standard errors clustered at the treatment cell level.

Table C.10: Persistent effects on participation (reweighted sample)

	Participated July 1, 2018		
Panel A: *Reduced form*			
Treatment	0.046***	0.049***	0.049***
	(0.014)	(0.017)	(0.017)
p-value (permutation test)	0.000	0.006	0.003
Panel B: *Two-stage least squares*			
Participated July 1, 2017	0.468***	0.467***	0.467***
	(0.134)	(0.149)	(0.149)
Treatment cell FEs	No	Yes	Yes
Control for predicted protest participation	No	No	Yes
Observations	849	849	849
DV mean (control grp.)	0.025	0.025	0.025
DV std. dev. (control grp.)	0.155	0.155	0.155
DV mean (all)	0.045	0.045	0.045
DV std. dev. (all)	0.206	0.206	0.206

Notes: Panel A reports estimated coefficients from regressions of protest turnout in July 2018 on a treatment indicator (the omitted control group is the union of the placebo treatment and pure control groups). Panel B reports estimated coefficients from two-stage least squares regressions of protest turnout in July 2018 on an indicator of protest turnout in July 2017, with the latter instrumented in the first stage with the treatment indicator. Column 2 includes controls for a full set of treatment cell fixed effects. Column 3 includes controls for a full set of treatment cell fixed effects and a control for predicted protest participation. Predicted protest participation is constructed by regressing an indicator for planned turnout in 2017 on gender, age, monthly income, expected income at age 40, amount of real estate owned, and an indicator for whether the individual had attended a protest in the past. Standard errors clustered at the treatment cell level. Observations re-weighted to match the sample of individuals who completed at least one wave of the study on observables.

Table C.11: Naturally occurring persistence rate

	Participation in July 1st march in year ...							
	2015		2016		2017		2018	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Participation in t-1	0.366***	0.356***	0.238***	0.255***	0.275*	0.272*	0.376**	0.426***
	[0.030]	[0.031]	[0.056]	[0.060]	[0.121]	[0.119]	[0.115]	[0.123]
Male		0.004		-0.006		0.010		-0.002
		[0.008]		[0.009]		[0.010]		[0.007]
Birth year		-0.007*		0.001		-0.000		-0.007*
		[0.003]		[0.002]		[0.003]		[0.003]
Not religious		-0.006		-0.007		-0.001		-0.008
		[0.011]		[0.011]		[0.012]		[0.010]
HK-oriented childhood env.		-0.001		0.008*		0.005		-0.003
		[0.004]		[0.003]		[0.004]		[0.004]
HH economic and social status		0.005		-0.000		0.001		0.009
		[0.004]		[0.004]		[0.005]		[0.004]
Own projected economic status		-0.004		-0.003		-0.004		-0.002
		[0.004]		[0.004]		[0.004]		[0.003]
Observations	3052	2801	1273	1172	781	699	1063	971
Adjusted R^2	0.204	0.202	0.110	0.117	0.087	0.091	0.127	0.175
Mean of Dep. Var.	0.0554	0.0564	0.0236	0.0256	0.0154	0.0157	0.0188	0.0175
SD of Dep. Var.	0.229	0.231	0.152	0.158	0.123	0.125	0.136	0.131

Notes: Table C.11 shows the results of regressing participation in the July 1st march in year t on participation in the July 1st march in year $t-1$ (and on a set of demographic characteristics for year t), separately by year. Participation in the July 1st march in year t is elicited from subjects either directly after the march in year t (asked as a question about "current" protest participation), or in future survey waves in years $t+1$, $t+2$, ... (asked as a question about past protest participation). For the years 2016, 2017, and 2018, the samples only include subjects who were *not* in the treatment groups of either of the experiments affecting the protest participation we conducted in 2016 (provision of information on fellow students' planned participation, see Cantoni et al., 2019) and 2017 (the experiment from the current paper). Hong Kong-oriented childhood environment, the household's economic and social status, and subjects' own projected economic status are z-score indices, i.e. they are weighted by the inverse covariance of the standardized variables (see Anderson, 2008).

C.3 Political beliefs and preferences

This section presents full regression evidence supporting the findings on political beliefs, political preferences, and second-order beliefs.

Figures C.2 and C.3 replicate the patterns of Figure 3, but splitting the sample depending on whether subjects (in treatment or control group) attended the 2017 protest. One can see that beliefs and preferences are never statistically significantly different in these subsamples, but if anything, the differences in preferences are larger among subjects who did *not* attend the 2017 protest. This suggests that the imprecise differences in preferences observed in Figure 3 (and in Tables C.12, C.14, and C.16, see below) are likely to be a result of sampling variation, rather than reflecting a mechanism producing persistent protest participation. This speaks against a meaningful treatment effect on preferences working through 2017 protest participation.

Tables C.12, C.14, and C.16 present regression evidence of (lack of) treatment effects on an index of individual political beliefs, of individual political preferences, and of political beliefs regarding other Hong Kong citizens' beliefs (second-order beliefs), respectively. Panel A presents the reduced-form estimates of the effect of treatment status, Panel B presents 2SLS estimates of the effect of 2017 participation, instrumenting with treatment status. Columns 1–3 measure beliefs and preferences after the march in July 2017, columns 4–6 measure beliefs and preferences before the 2018 march, in June 2018. Tables C.13, C.15, and C.17 reproduce the same setup, but observations in the regressions are weighted to match the sample of individuals who completed at least one wave of the study on observables.

Table C.18 reports regression evidence using all individual survey questions as outcomes (instead of the summary indices of the previous tables), and using all pairwise comparisons across the three treatment arms.

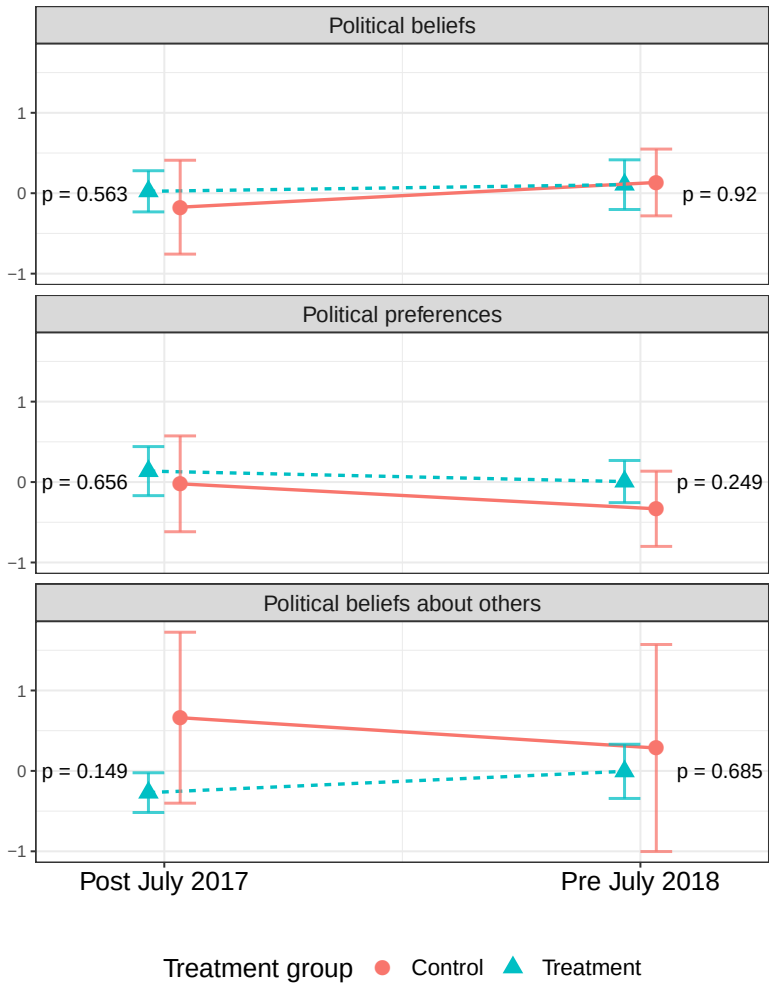

Figure C.2: Survey results on beliefs and preferences for treatment and control groups in the short run and long run (2017 participants only). *p*-values calculated from pairwise *t*-tests of equality of means between treatment and control.

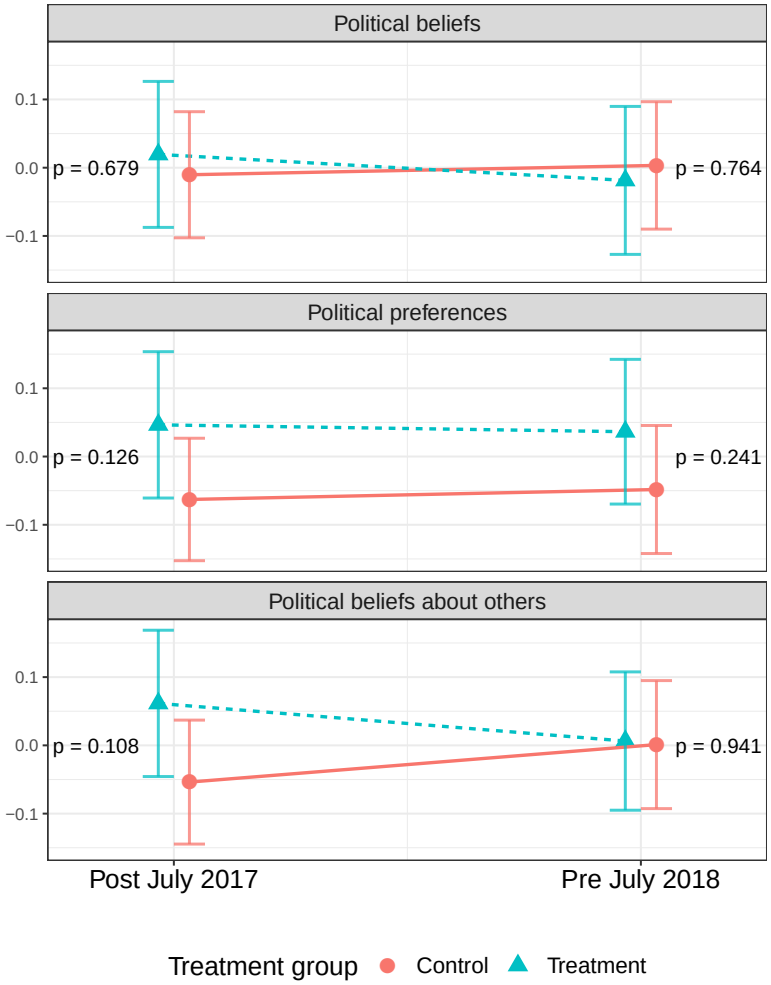

Figure C.3: Survey results on beliefs and preferences for treatment and control groups in the short run and long run (2017 non-participants only). p-values calculated from pairwise t-tests of equality of means between treatment and control.

Table C.12: Effects on political beliefs

	Post-July 2017			Pre-July 2018		
Panel A: *Reduced form*						
Treatment	0.032	−0.056	−0.054	−0.010	−0.029	−0.029
	(0.070)	(0.087)	(0.087)	(0.069)	(0.094)	(0.094)
p-value (permutation test)	0.634	0.539	0.525	0.894	0.752	0.732
Panel B: *Two-stage least squares*						
Participated July 1, 2017	0.326	−0.521	−0.506	−0.097	−0.273	−0.259
	(0.703)	(0.824)	(0.826)	(0.695)	(0.882)	(0.890)
Treatment cell FEs	No	Yes	Yes	No	Yes	Yes
Control for predicted protest participation	No	No	Yes	No	No	Yes
Observations	849	849	849	849	849	849
DV mean (control grp.)	-0.012	-0.012	-0.012	0.005	0.005	0.005
DV std. dev. (control grp.)	1.025	1.025	1.025	1.034	1.034	1.034
DV mean (all)	0.002	0.002	0.002	0.001	0.001	0.001
DV std. dev. (all)	1.000	1.000	1.000	1.018	1.018	1.018

Notes: Panel A reports estimated coefficients from regressions of an index of individual political beliefs in July 2017 (columns 1–3) or in June 2018 (columns 4–6) on a treatment indicator (the omitted control group is the union of the placebo treatment and pure control groups). Panel B reports estimated coefficients from two-stage least squares regressions of an index of individual political beliefs in July 2017 (columns 1–3) or in June 2018 (columns 4–6) on an indicator of protest turnout in July 2017, with the latter instrumented in the first stage with the treatment indicator. Columns 2 and 5 include controls for a full set of treatment cell fixed effects. Columns 3 and 6 further include a control for predicted protest participation. Predicted protest participation is constructed by regressing an indicator for planned turnout in 2017 on gender, age, monthly income, expected income at age 40, amount of real estate owned, and an indicator for whether the individual had attended a protest in the past. The individual survey questions combined to construct the index are provided in the Online Appendix. Standard errors clustered at the treatment cell level.

Table C.13: Effects on political beliefs (reweighted sample)

	Post-July 2017			Pre-July 2018		
Panel A: *Reduced form*						
Treatment	0.033	−0.057	−0.055	−0.005	−0.023	−0.023
	(0.069)	(0.086)	(0.086)	(0.069)	(0.095)	(0.095)
p-value (permutation test)	0.628	0.493	0.526	0.943	0.808	0.800
Panel B: *Two-stage least squares*						
Participated July 1, 2017	0.340	−0.538	−0.521	−0.053	−0.221	−0.204
	(0.704)	(0.822)	(0.825)	(0.704)	(0.895)	(0.904)
Treatment cell FEs	No	Yes	Yes	No	Yes	Yes
Control for predicted protest participation	No	No	Yes	No	No	Yes
Observations	849	849	849	849	849	849
DV mean (control grp.)	-0.014	-0.014	-0.014	-0.000	-0.000	-0.000
DV std. dev. (control grp.)	1.024	1.024	1.024	1.034	1.034	1.034
DV mean (all)	0.000	0.000	0.000	-0.003	-0.003	-0.003
DV std. dev. (all)	1.001	1.001	1.001	1.018	1.018	1.018

Notes: Panel A reports estimated coefficients from regressions of an index of individual political beliefs in July 2017 (columns 1–3) or in June 2018 (columns 4–6) on a treatment indicator (the omitted control group is the union of the placebo treatment and pure control groups). Panel B reports estimated coefficients from two-stage least squares regressions of an index of individual political beliefs in July 2017 (columns 1–3) or in June 2018 (columns 4–6) on an indicator of protest turnout in July 2017, with the latter instrumented in the first stage with the treatment indicator. Columns 2 and 5 include controls for a full set of treatment cell fixed effects. Columns 3 and 6 further include a control for predicted protest participation. Predicted protest participation is constructed by regressing an indicator for planned turnout in 2017 on gender, age, monthly income, expected income at age 40, amount of real estate owned, and an indicator for whether the individual had attended a protest in the past. The individual survey questions combined to construct the index are provided in the Online Appendix. Standard errors clustered at the treatment cell level. Observations re-weighted to match the sample of individuals who completed at least one wave of the study on observables.

Table C.14: Effects on political preferences

	Post-July 2017			Pre-July 2018		
Panel A: *Reduced form*						
Treatment	0.119*	0.135*	0.134*	0.085	0.092	0.092
	(0.065)	(0.073)	(0.073)	(0.067)	(0.095)	(0.095)
p-value (permutation test)	0.092	0.117	0.105	0.241	0.264	0.288
Panel B: *Two-stage least squares*						
Participated July 1, 2017	1.197*	1.264*	1.260*	0.855	0.859	0.875
	(0.683)	(0.753)	(0.757)	(0.701)	(0.935)	(0.943)
Treatment cell FEs	No	Yes	Yes	No	Yes	Yes
Control for predicted protest participation	No	No	Yes	No	No	Yes
Observations	849	849	849	849	849	849
DV mean (control grp.)	-0.062	-0.062	-0.062	-0.052	-0.052	-0.052
DV std. dev. (control grp.)	0.995	0.995	0.995	1.040	1.040	1.040
DV mean (all)	-0.011	-0.011	-0.011	-0.015	-0.015	-0.015
DV std. dev. (all)	0.993	0.993	0.993	1.007	1.007	1.007

Notes: Panel A reports estimated coefficients from regressions of an index of individual political preferences in July 2017 (columns 1–3) or in June 2018 (columns 4–6) on a treatment indicator (the omitted control group is the union of the placebo treatment and pure control groups). Panel B reports estimated coefficients from two-stage least squares regressions of an index of individual political preferences in July 2017 (columns 1–3) or in June 2018 (columns 4–6) on an indicator of protest turnout in July 2017, with the latter instrumented in the first stage with the treatment indicator. Columns 2 and 5 include controls for a full set of treatment cell fixed effects. Columns 3 and 6 further include a control for predicted protest participation. Predicted protest participation is constructed by regressing an indicator for planned turnout in 2017 on gender, age, monthly income, expected income at age 40, amount of real estate owned, and an indicator for whether the individual had attended a protest in the past. The individual survey questions combined to construct the index are provided in the Online Appendix. Standard errors clustered at the treatment cell level.

Table C.15: Effects on political preferences (reweighted sample)

	Post-July 2017			Pre-July 2018		
Panel A: *Reduced form*						
Treatment	0.122*	0.138*	0.136*	0.089	0.095	0.095
	(0.064)	(0.072)	(0.072)	(0.067)	(0.094)	(0.094)
p-value (permutation test)	0.061	0.081	0.098	0.222	0.270	0.276
Panel B: *Two-stage least squares*						
Participated July 1, 2017	1.248*	1.297*	1.293*	0.911	0.898	0.916
	(0.688)	(0.753)	(0.758)	(0.710)	(0.942)	(0.952)
Treatment cell FEs	No	Yes	Yes	No	Yes	Yes
Control for predicted protest participation	No	No	Yes	No	No	Yes
Observations	849	849	849	849	849	849
DV mean (control grp.)	-0.066	-0.066	-0.066	-0.058	-0.058	-0.058
DV std. dev. (control grp.)	0.993	0.993	0.993	1.040	1.040	1.040
DV mean (all)	-0.013	-0.013	-0.013	-0.019	-0.019	-0.019
DV std. dev. (all)	0.992	0.992	0.992	1.007	1.007	1.007

Notes: Panel A reports estimated coefficients from regressions of an index of individual political preferences in July 2017 (columns 1–3) or in June 2018 (columns 4–6) on a treatment indicator (the omitted control group is the union of the placebo treatment and pure control groups). Panel B reports estimated coefficients from two-stage least squares regressions of an index of individual political preferences in July 2017 (columns 1–3) or in June 2018 (columns 4–6) on an indicator of protest turnout in July 2017, with the latter instrumented in the first stage with the treatment indicator. Columns 2 and 5 include controls for a full set of treatment cell fixed effects. Columns 3 and 6 further include a control for predicted protest participation. Predicted protest participation is constructed by regressing an indicator for planned turnout in 2017 on gender, age, monthly income, expected income at age 40, amount of real estate owned, and an indicator for whether the individual had attended a protest in the past. The individual survey questions combined to construct the index are provided in the Online Appendix. Standard errors clustered at the treatment cell level. Observations re-weighted to match the sample of individuals who completed at least one wave of the study on observables.

Table C.16: Effects on political beliefs regarding other Hong Kong citizens

	Post-July 2017			Pre-July 2018		
Panel A: *Reduced form*						
Treatment	0.069	0.043	0.043	0.000	0.015	0.015
	(0.065)	(0.078)	(0.078)	(0.067)	(0.077)	(0.077)
p-value (permutation test)	0.297	0.629	0.600	1.000	0.862	0.879
Panel B: *Two-stage least squares*						
Participated July 1, 2017	0.698	0.402	0.409	0.003	0.139	0.143
	(0.677)	(0.734)	(0.736)	(0.676)	(0.719)	(0.727)
Treatment cell FEs	No	Yes	Yes	No	Yes	Yes
Control for predicted protest participation	No	No	Yes	No	No	Yes
Observations	849	849	849	849	849	849
DV mean (control grp.)	-0.045	-0.045	-0.045	0.005	0.005	0.005
DV std. dev. (control grp.)	1.017	1.017	1.017	1.051	1.051	1.051
DV mean (all)	-0.015	-0.015	-0.015	0.005	0.005	0.005
DV std. dev. (all)	0.998	0.998	0.998	1.009	1.009	1.009

Notes: Panel A reports estimated coefficients from regressions of an index of individual political beliefs in July 2017 (columns 1–3) or in June 2018 (columns 4–6) on a treatment indicator (the omitted control group is the union of the placebo treatment and pure control groups). Panel B reports estimated coefficients from two-stage least squares regressions of an index of individual political beliefs in July 2017 (columns 1–3) or in June 2018 (columns 4–6) on an indicator of protest turnout in July 2017, with the latter instrumented in the first stage with the treatment indicator. Columns 2 and 5 include controls for a full set of treatment cell fixed effects. Columns 3 and 6 further include a control for predicted protest participation. Predicted protest participation is constructed by regressing an indicator for planned turnout in 2017 on gender, age, monthly income, expected income at age 40, amount of real estate owned, and an indicator for whether the individual had attended a protest in the past. The individual survey questions combined to construct the index are provided in the Online Appendix. Standard errors clustered at the treatment cell level.

Table C.17: Effects on political beliefs regarding other Hong Kong citizens (reweighted sample)

	Post-July 2017			Pre-July 2018		
Panel A: *Reduced form*						
Treatment	0.072	0.045	0.045	0.003	0.016	0.016
	(0.066)	(0.078)	(0.078)	(0.066)	(0.075)	(0.075)
p-value (permutation test)	0.324	0.603	0.632	0.968	0.832	0.846
Panel B: *Two-stage least squares*						
Participated July 1, 2017	0.739	0.420	0.428	0.034	0.155	0.159
	(0.688)	(0.736)	(0.739)	(0.677)	(0.713)	(0.722)
Treatment cell FEs	No	Yes	Yes	No	Yes	Yes
Control for predicted protest participation	No	No	Yes	No	No	Yes
Observations	849	849	849	849	849	849
DV mean (control grp.)	-0.044	-0.044	-0.044	0.005	0.005	0.005
DV std. dev. (control grp.)	1.017	1.017	1.017	1.052	1.052	1.052
DV mean (all)	-0.012	-0.012	-0.012	0.006	0.006	0.006
DV std. dev. (all)	0.997	0.997	0.997	1.009	1.009	1.009

Notes: Panel A reports estimated coefficients from regressions of an index of individual political beliefs in July 2017 (columns 1–3) or in June 2018 (columns 4–6) on a treatment indicator (the omitted control group is the union of the placebo treatment and pure control groups). Panel B reports estimated coefficients from two-stage least squares regressions of an index of individual political beliefs in July 2017 (columns 1–3) or in June 2018 (columns 4–6) on an indicator of protest turnout in July 2017, with the latter instrumented in the first stage with the treatment indicator. Columns 2 and 5 include controls for a full set of treatment cell fixed effects. Columns 3 and 6 further include a control for predicted protest participation. Predicted protest participation is constructed by regressing an indicator for planned turnout in 2017 on gender, age, monthly income, expected income at age 40, amount of real estate owned, and an indicator for whether the individual had attended a protest in the past. The individual survey questions combined to construct the index are provided in the Online Appendix. Standard errors clustered at the treatment cell level. Observations re-weighted to match the sample of individuals who completed at least one wave of the study on observables.

Table C.18: Group effects on individual outcomes

	(1) (T-Pu)	(2) (T-Pu, FE)	(3) (T-Pl)	(4) (T-Pl, FE)	(5) (Pl-Pu)	(6) (Pl-Pu, FE)
Panel A.1: *Likelihood of integration by 2025, post-July 2017*						
Group 1	0.058	0.059	0.051	0.050	0.007	0.007
	(0.043)	(0.043)	(0.055)	(0.055)	(0.057)	(0.058)
DV mean	2.184	2.184	2.184	2.184	2.184	2.184
DV std.dev.	0.572	0.572	0.572	0.572	0.572	0.572
p-value	0.179	0.168	0.355	0.362	0.904	0.910
Adj. p-value	0.471	-	0.702	-	0.906	-
Panel A.2: *Likelihood of integration by 2025, pre-July 2018*						
Group 1	0.031	0.031	0.026	0.021	0.005	0.007
	(0.046)	(0.046)	(0.057)	(0.056)	(0.060)	(0.060)
DV mean	2.193	2.193	2.193	2.193	2.193	2.193
DV std.dev.	0.601	0.601	0.601	0.601	0.601	0.601
p-value	0.500	0.497	0.651	0.704	0.928	0.912
Adj. p-value	0.816	-	0.652	-	0.930	-
Panel B.1: *Confidence in answer to likelihood of integration by 2025, post-July 2017*						
Group 1	-0.011	-0.022	-0.097	-0.098	0.087	0.089
	(0.135)	(0.135)	(0.175)	(0.176)	(0.179)	(0.179)
DV mean	6.253	6.253	6.253	6.253	6.253	6.253
DV std.dev.	1.801	1.801	1.801	1.801	1.801	1.801
p-value	0.936	0.873	0.579	0.578	0.629	0.621
Adj. p-value	0.943	-	0.586	-	0.973	-
Panel B.2: *Confidence in answer to likelihood of integration by 2025, pre-July 2018*						
Group 1	-0.044	-0.039	0.132	0.134	-0.176	-0.165
	(0.125)	(0.126)	(0.169)	(0.169)	(0.174)	(0.174)
DV mean	6.895	6.895	6.895	6.895	6.895	6.895
DV std.dev.	1.716	1.716	1.716	1.716	1.716	1.716
p-value	0.728	0.756	0.434	0.430	0.313	0.342
Adj. p-value	0.909	-	0.712	-	0.686	-
Panel C.1: *Likelihood of integration by 2050, post-July 2017*						
Group 1	0.066	0.066	0.054	0.051	0.011	0.011
	(0.057)	(0.058)	(0.074)	(0.074)	(0.076)	(0.076)
DV mean	1.894	1.894	1.894	1.894	1.894	1.894
DV std.dev.	0.764	0.764	0.764	0.764	0.764	0.764
p-value	0.254	0.253	0.463	0.486	0.881	0.884
Adj. p-value	0.436	-	0.708	-	0.986	-

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Table C.18 – continued from previous page.

	(1) (T-Pu)	(2) (T-Pu, FE)	(3) (T-Pl)	(4) (T-Pl, FE)	(5) (Pl-Pu)	(6) (Pl-Pu, FE)
Panel C.2: *Likelihood of integration by 2050, pre-July 2018*						
Group 1	-0.047	-0.048	-0.083	-0.087	0.036	0.035
	(0.057)	(0.057)	(0.072)	(0.072)	(0.076)	(0.076)
DV mean	1.832	1.832	1.832	1.832	1.832	1.832
DV std.dev.	0.755	0.755	0.755	0.755	0.755	0.755
p-value	0.409	0.401	0.247	0.225	0.633	0.640
Adj. p-value	0.848	-	0.624	-	0.844	-
Panel D.1: *Confidence in answer to likelihood of integration by 2050, post-July 2017*						
Group 1	-0.204	-0.224	-0.248	-0.255	0.043	0.044
	(0.161)	(0.161)	(0.210)	(0.211)	(0.209)	(0.209)
DV mean	6.271	6.271	6.271	6.271	6.271	6.271
DV std.dev.	2.140	2.140	2.140	2.140	2.140	2.140
p-value	0.204	0.165	0.240	0.227	0.836	0.834
Adj. p-value	0.431	-	0.595	-	0.995	-
Panel D.2: *Confidence in answer to likelihood of integration by 2050, pre-July 2018*						
Group 1	-0.027	-0.034	0.207	0.209	-0.234	-0.233
	(0.150)	(0.151)	(0.190)	(0.190)	(0.203)	(0.203)
DV mean	6.865	6.865	6.865	6.865	6.865	6.865
DV std.dev.	2.002	2.002	2.002	2.002	2.002	2.002
p-value	0.857	0.823	0.276	0.273	0.249	0.252
Adj. p-value	0.869	-	0.585	-	0.615	-
Panel E.1: *Index of political beliefs (z-score), post-July 2017*						
Group 1	0.047	0.041	0.001	-0.003	0.046	0.046
	(0.074)	(0.074)	(0.098)	(0.098)	(0.101)	(0.101)
DV mean	0.002	0.002	0.002	0.002	0.002	0.002
DV std.dev.	1.000	1.000	1.000	1.000	1.000	1.000
p-value	0.526	0.576	0.993	0.973	0.648	0.647
Panel E.2: *Index of political beliefs (z-score), pre-July 2018*						
Group 1	-0.034	-0.035	0.043	0.037	-0.076	-0.073
	(0.078)	(0.078)	(0.096)	(0.096)	(0.101)	(0.101)
DV mean	0.001	0.001	0.001	0.001	0.001	0.001
DV std.dev.	1.018	1.018	1.018	1.018	1.018	1.018
p-value	0.665	0.655	0.659	0.700	0.452	0.473
Panel F.1: *Perceived importance of democracy, post-July 2017*						
Group 1	0.092	0.106	0.059	0.068	0.033	0.045

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Table C.18 – continued from previous page.

	(1) (T-Pu)	(2) (T-Pu, FE)	(3) (T-Pl)	(4) (T-Pl, FE)	(5) (Pl-Pu)	(6) (Pl-Pu, FE)
	(0.157)	(0.158)	(0.201)	(0.201)	(0.215)	(0.215)
DV mean	6.512	6.512	6.512	6.512	6.512	6.512
DV std.dev.	2.109	2.109	2.109	2.109	2.109	2.109
p-value	0.559	0.500	0.771	0.735	0.877	0.833
Adj. p-value	0.794	-	0.798	-	0.988	-
Panel F.2: *Perceived importance of democracy, pre-July 2018*						
Group 1	0.314	0.323	0.097	0.107	0.217	0.233
	(0.159)	(0.160)	(0.202)	(0.202)	(0.217)	(0.216)
DV mean	6.787	6.787	6.787	6.787	6.787	6.787
DV std.dev.	2.131	2.131	2.131	2.131	2.131	2.131
p-value	0.048	0.044	0.629	0.596	0.318	0.283
Adj. p-value	0.194	-	0.863	-	0.530	-
Panel G.1: *Political attitudes (pro-democracy vs. pro-Beijing), post-July 2017*						
Group 1	0.110	0.110	0.308	0.308	-0.197	-0.206
	(0.152)	(0.153)	(0.195)	(0.195)	(0.197)	(0.197)
DV mean	3.703	3.703	3.703	3.703	3.703	3.703
DV std.dev.	2.013	2.013	2.013	2.013	2.013	2.013
p-value	0.470	0.474	0.114	0.115	0.318	0.297
Adj. p-value	0.832	-	0.348	-	0.754	-
Panel G.2: *Political attitudes (pro-democracy vs. pro-Beijing), pre-July 2018*						
Group 1	-0.067	-0.064	0.288	0.286	-0.356	-0.357
	(0.152)	(0.153)	(0.194)	(0.195)	(0.198)	(0.199)
DV mean	3.789	3.789	3.789	3.789	3.789	3.789
DV std.dev.	2.016	2.016	2.016	2.016	2.016	2.016
p-value	0.659	0.675	0.138	0.143	0.074	0.073
Adj. p-value	0.881	-	0.419	-	0.230	-
Panel H.1: *Legitimacy of CCP rule in Hong Kong, post-July 2017*						
Group 1	0.263	0.240	0.096	0.094	0.168	0.149
	(0.186)	(0.186)	(0.231)	(0.231)	(0.241)	(0.240)
DV mean	4.910	4.910	4.910	4.910	4.910	4.910
DV std.dev.	2.435	2.435	2.435	2.435	2.435	2.435
p-value	0.157	0.198	0.679	0.686	0.487	0.534
Adj. p-value	0.453	-	0.963	-	0.849	-
Panel H.2: *Legitimacy of CCP rule in Hong Kong, pre-July 2018*						
Group 1	-0.042	-0.061	0.303	0.303	-0.345	-0.377
	(0.183)	(0.184)	(0.226)	(0.226)	(0.253)	(0.250)

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Table C.18 – continued from previous page.

	(1) (T-Pu)	(2) (T-Pu, FE)	(3) (T-Pl)	(4) (T-Pl, FE)	(5) (Pl-Pu)	(6) (Pl-Pu, FE)
DV mean	4.962	4.962	4.962	4.962	4.962	4.962
DV std.dev.	2.441	2.441	2.441	2.441	2.441	2.441
p-value	0.817	0.739	0.181	0.181	0.173	0.133
Adj. p-value	0.812	-	0.444	-	0.403	-
Panel I.1: *HK should be independent, post-July 2017*						
Group 1	-0.051	-0.048	-0.083	-0.068	0.032	0.033
	(0.203)	(0.203)	(0.254)	(0.254)	(0.268)	(0.268)
DV mean	4.353	4.353	4.353	4.353	4.353	4.353
DV std.dev.	2.675	2.675	2.675	2.675	2.675	2.675
p-value	0.802	0.813	0.746	0.790	0.906	0.903
Adj. p-value	0.803	-	0.928	-	0.902	-
Panel I.2: *HK should be independent, pre-July 2018*						
Group 1	0.117	0.144	-0.049	-0.022	0.166	0.193
	(0.215)	(0.215)	(0.271)	(0.269)	(0.284)	(0.283)
DV mean	4.565	4.565	4.565	4.565	4.565	4.565
DV std.dev.	2.842	2.842	2.842	2.842	2.842	2.842
p-value	0.585	0.504	0.856	0.935	0.559	0.496
Adj. p-value	0.927	-	0.857	-	0.575	-
Panel J.1: *Index of political preferences (z-score), post-July 2017*						
Group 1	0.110	0.111	0.137	0.144	-0.027	-0.031
	(0.075)	(0.075)	(0.096)	(0.095)	(0.098)	(0.098)
DV mean	-0.011	-0.011	-0.011	-0.011	-0.011	-0.011
DV std.dev.	0.993	0.993	0.993	0.993	0.993	0.993
p-value	0.143	0.143	0.151	0.133	0.780	0.748
Panel J.2: *Index of political preferences (z-score), pre-July 2018*						
Group 1	0.047	0.054	0.168	0.175	-0.121	-0.117
	(0.076)	(0.076)	(0.095)	(0.095)	(0.102)	(0.102)
DV mean	-0.015	-0.015	-0.015	-0.015	-0.015	-0.015
DV std.dev.	1.007	1.007	1.007	1.007	1.007	1.007
p-value	0.537	0.473	0.079	0.066	0.236	0.251
Panel K.1: *Others afraid of expressing pro-independence views, post-July 2017*						
Group 1	0.047	0.036	-0.050	-0.044	0.097	0.079
	(0.165)	(0.165)	(0.206)	(0.206)	(0.211)	(0.210)
DV mean	4.441	4.441	4.441	4.441	4.441	4.441
DV std.dev.	2.153	2.153	2.153	2.153	2.153	2.153
p-value	0.777	0.827	0.807	0.830	0.646	0.707

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Table C.18 – continued from previous page.

	(1) (T-Pu)	(2) (T-Pu, FE)	(3) (T-Pl)	(4) (T-Pl, FE)	(5) (Pl-Pu)	(6) (Pl-Pu, FE)
Adj. p-value	0.950	-	0.809	-	0.950	-
Panel K.2: *Others afraid of expressing pro-independence views, pre-July 2018*						
Group 1	-0.243	-0.219	-0.087	-0.076	-0.156	-0.150
	(0.177)	(0.178)	(0.224)	(0.224)	(0.218)	(0.219)
DV mean	4.925	4.925	4.925	4.925	4.925	4.925
DV std.dev.	2.302	2.302	2.302	2.302	2.302	2.302
p-value	0.171	0.218	0.699	0.734	0.475	0.492
Adj. p-value	0.480	-	0.966	-	0.851	-
Panel L.1: *Second-order beliefs about importance of democracy, post-July 2017*						
Group 1	0.060	0.065	0.129	0.123	-0.069	-0.066
	(0.121)	(0.122)	(0.154)	(0.154)	(0.160)	(0.161)
DV mean	6.380	6.380	6.380	6.380	6.380	6.380
DV std.dev.	1.607	1.607	1.607	1.607	1.607	1.607
p-value	0.621	0.596	0.403	0.425	0.669	0.681
Adj. p-value	0.952	-	0.866	-	0.887	-
Panel L.2: *Second-order beliefs about importance of democracy, pre-July 2018*						
Group 1	0.031	0.030	-0.055	-0.056	0.086	0.090
	(0.123)	(0.124)	(0.152)	(0.153)	(0.156)	(0.156)
DV mean	6.420	6.420	6.420	6.420	6.420	6.420
DV std.dev.	1.601	1.601	1.601	1.601	1.601	1.601
p-value	0.799	0.811	0.718	0.714	0.580	0.563
Adj. p-value	0.957	-	0.914	-	0.552	-
Panel M.1: *Second-order beliefs about legitimacy of CCP rule in Hong Kong, post-July 2017*						
Group 1	0.131	0.111	0.132	0.119	-0.001	-0.014
	(0.143)	(0.143)	(0.190)	(0.189)	(0.180)	(0.180)
DV mean	5.166	5.166	5.166	5.166	5.166	5.166
DV std.dev.	1.895	1.895	1.895	1.895	1.895	1.895
p-value	0.359	0.439	0.488	0.531	0.996	0.936
Adj. p-value	0.827	-	0.863	-	0.998	-
Panel M.2: *Second-order beliefs about legitimacy of CCP rule in Hong Kong, pre-July 2018*						
Group 1	-0.089	-0.097	0.046	0.047	-0.135	-0.142
	(0.138)	(0.139)	(0.170)	(0.170)	(0.190)	(0.190)
DV mean	5.348	5.348	5.348	5.348	5.348	5.348
DV std.dev.	1.837	1.837	1.837	1.837	1.837	1.837
p-value	0.521	0.485	0.787	0.783	0.479	0.455
Adj. p-value	0.884	-	0.797	-	0.723	-

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Table C.18 – continued from previous page.

	(1) (T-Pu)	(2) (T-Pu, FE)	(3) (T-Pl)	(4) (T-Pl, FE)	(5) (Pl-Pu)	(6) (Pl-Pu, FE)
Panel N.1: *Second-order beliefs about whether HK should be independent, post-July 2017*						
Group 1	-0.029	-0.022	0.083	0.091	-0.111	-0.114
	(0.140)	(0.141)	(0.178)	(0.178)	(0.182)	(0.183)
DV mean	4.609	4.609	4.609	4.609	4.609	4.609
DV std.dev.	1.848	1.848	1.848	1.848	1.848	1.848
p-value	0.838	0.877	0.642	0.608	0.542	0.533
Adj. p-value	0.839	-	0.876	-	0.945	-
Panel N.2: *Second-order beliefs about whether HK should be independent, pre-July 2018*						
Group 1	-0.016	-0.000	0.220	0.230	-0.236	-0.234
	(0.154)	(0.154)	(0.191)	(0.190)	(0.194)	(0.195)
DV mean	4.594	4.594	4.594	4.594	4.594	4.594
DV std.dev.	1.999	1.999	1.999	1.999	1.999	1.999
p-value	0.918	0.999	0.249	0.227	0.225	0.230
Adj. p-value	0.924	-	0.666	-	0.595	-
Panel O.1: *Index of second-order beliefs (z-score), post-July 2017*						
Group 1	0.053	0.050	0.104	0.100	-0.051	-0.055
	(0.075)	(0.075)	(0.096)	(0.096)	(0.100)	(0.100)
DV mean	-0.015	-0.015	-0.015	-0.015	-0.015	-0.015
DV std.dev.	0.998	0.998	0.998	0.998	0.998	0.998
p-value	0.477	0.505	0.280	0.298	0.609	0.580
Panel O.2: *Index of second-order beliefs (z-score), pre-July 2018*						
Group 1	-0.026	-0.025	0.057	0.060	-0.083	-0.084
	(0.077)	(0.077)	(0.093)	(0.093)	(0.103)	(0.103)
DV mean	0.005	0.005	0.005	0.005	0.005	0.005
DV std.dev.	1.009	1.009	1.009	1.009	1.009	1.009
p-value	0.738	0.746	0.541	0.522	0.424	0.419
Treatment cell FEs	No	Yes	No	Yes	No	Yes
Observations	849	849	849	849	849	849

Notes: Table reports estimated coefficients from regressions of each outcome on an indicator for the first condition in the column heading (the main treatment in Columns 1-4 and the placebo in Columns 5-6), in which the sample is limited to the two conditions listed in the column heading (treatment and pure control in Columns 1-2, treatment and placebo in Columns 3-4, and placebo and pure control in Columns 5-6). Columns 2, 4, and 6 include controls for a full set of treatment cell fixed effects. We present p-values adjusted for multiple hypothesis testing following Enikolopov et al. (2019) at the level of each of the three broad categories within each period (post-17 and pre-18) and at the level of each of the three broad categories (political beliefs, political preferences, and political beliefs about other Hong Kong citizens).

C.4 Social interactions

This section presents supplementary regression tables and robustness checks relating to the evidence on social interactions (heterogeneity by cell-level treatment intensity).

Figure C.4 reproduces the finding of Figure 4, but replaces the "target" intensity of cell-level treatment (0%, 1%, 50%, or 75%) with the actually achieved, empirical treatment intensity (cf. Table **??**). Figure C.5 is the weighted OLS analogue of Figure 4. Figure C.6 is the weighted OLS analogue of Figure C.4.

Figure C.7 shows actual protest participation on July 1, 2018, by planned participation and treatment status.

Table C.19 presents regression evidence of heterogeneity in the treatment effect on turnout in 2018, depending on the cell-level treatment intensity (column 4 corresponds to the result in Table 1, column 4). Table C.20 presents an equivalent analysis, but in a setting in which the effect of the cell-level treatment share is assumed to interact linearly with individual treatment (as opposed to the semi-parametric setting of the previous Table).

Table C.21 controls for various individual characteristics that, by virtue of the cell-level randomization, are not perfectly balanced across treatment intensity levels, and interacts those individual characteristics with treatment status. (including all of the unbalanced characteristics interacted with treatment in the same specification absorbs too much variation and we no longer are able to precisely estimate the coefficients of interest). Table C.22 is equivalent to Table C.20 but replaces the "target" intensity of cell-level treatment (0%, 1%, 50%, or 75%) with the actually achieved, empirical treatment intensity (cf. Table **??**).

Tables C.23, C.24, and C.25 are the weighted OLS analogues to Tables C.19, C.20, and C.22.

Table C.26 presents evidence on (stated) plans to participate in the July 1st, 2018, march.

Table C.27 (and its weighted OLS equivalent in Table C.28)study the heterogeneous treatment effects on the formation of new political friendships in 2017/18, depending on cell-level treatment intensity. Analogously to Table C.21, Table C.29 controls for unbalanced individual-level characteristics and their interaction with treatment status, using newly-formed friendships as the dependent variable.

Figure C.4: Heterogeneous treatment effects by empirical cell treatment intensity. p-values calculated from a test that the coefficient on the interaction between individual treatment and cell treatment intensity (graphically, the slope of the line) equals zero: 0.402 (2017, treatment); 0.535 (2017, control); 0.268 (2018, treatment); 0.254 (2018, control).

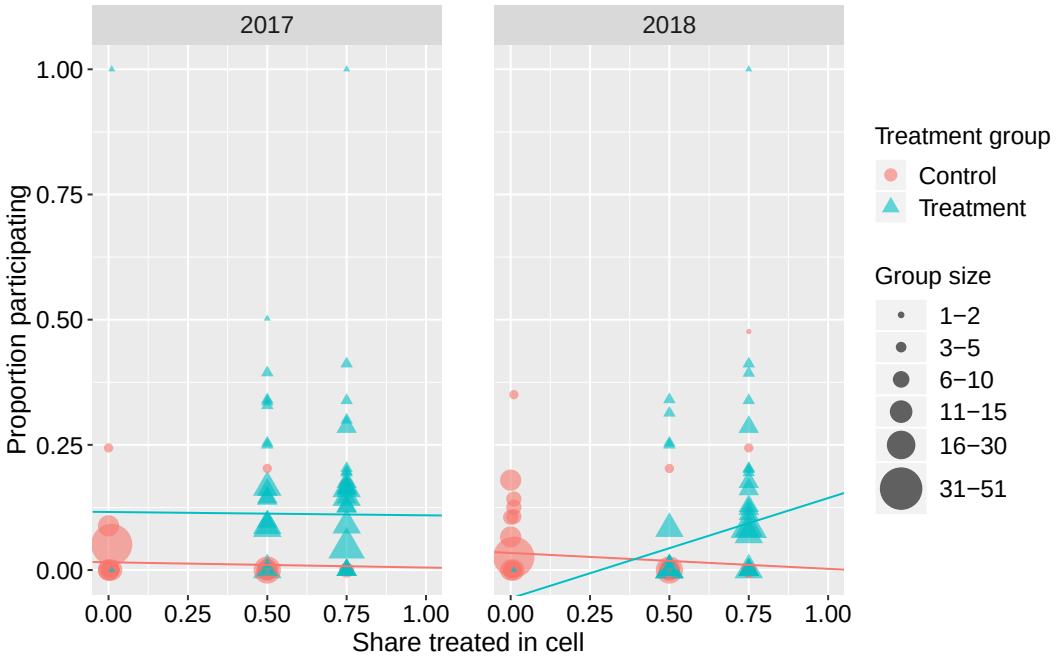

Figure C.5: Heterogeneous treatment effects by target cell treatment intensity (reweighted sample). *p*-values calculated from a test that the coefficient on the interaction between individual treatment and cell treatment intensity (graphically, the slope of the line) equals zero: 0.402 (2017, treatment); 0.535 (2017, control); 0.268 (2018, treatment); 0.254 (2018, control).

Figure C.6: Heterogeneous treatment effects by empirical cell treatment intensity (reweighted sample). *p*-values calculated from a test that the coefficient on the interaction between individual treatment and cell treatment intensity (graphically, the slope of the line) equals zero. 0.402 (2017, treatment); 0.535 (2017, control); 0.268 (2018, treatment); 0.254 (2018, control).

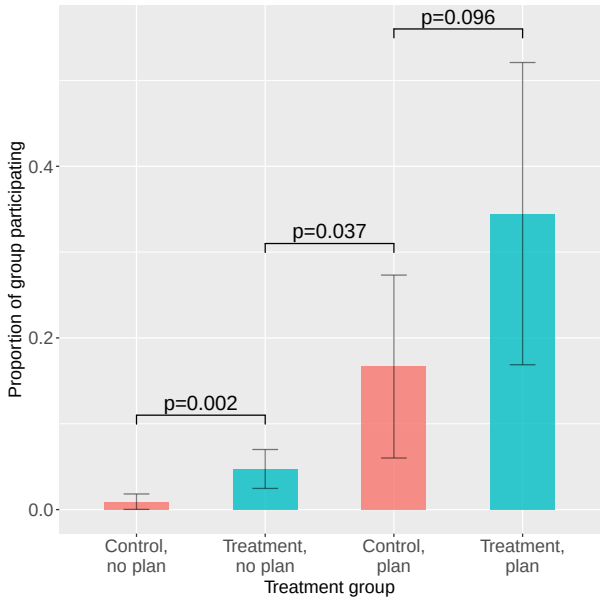

Figure C.7: Participation in July 1, 2018, protest by planned participation and treatment status. *p*-values calculated from pairwise *t*-tests of equality of means between groups.

Table C.19: Heterogeneity with respect to cell treatment intensity (semiparametric specification)

	Protest participation in July 2018			
	(1)	(2)	(3)	(4)
Treatment	-0.030^{***}	-0.034^{*}	-0.033^{*}	-0.046
	(0.011)	(0.019)	(0.019)	(0.035)
p-value (permutation test)	0.008	0.021	0.028	0.042
Treatment $\times$ 50intensity	0.058^{***}	0.062^{***}	0.062^{***}	0.063^{***}
	(0.017)	(0.024)	(0.024)	(0.023)
p-value (permutation test)	0.017	0.009	0.035	0.011
Treatment $\times$ 75intensity	0.106^{***}	0.118^{***}	0.117^{***}	0.118^{***}
	(0.028)	(0.039)	(0.038)	(0.039)
p-value (permutation test)	0.002	0.014	0.007	0.009
Treatment cell FEs	No	Yes	Yes	Yes
Control for predicted protest participation	No	No	Yes	Yes (interacted)
Observations	849	849	849	849
p-value (Treatment=Treatment$\times$50)	0.000	0.000	0.000	0.000
p-value (Treatment=Treatment$\times$75)	0.001	0.000	0.002	0.012
p-value (Treatment$\times$50=Treatment$\times$75)	0.142	0.221	0.221	0.214
DV mean (control grp.)	0.025	0.025	0.025	0.025
DV std. dev. (control grp.)	0.156	0.156	0.156	0.156
DV mean (all)	0.045	0.045	0.045	0.045
DV std. dev. (all)	0.207	0.207	0.207	0.207

Notes: Table reports estimated coefficients from regressions of protest turnout in July 2018 on a treatment indicator (the omitted control group is the union of the placebo treatment and pure control groups), the individual's cell's treatment intensity, and the interaction of the two. Column 2 includes controls for a full set of treatment cell fixed effects. Column 3 includes controls for a full set of treatment cell fixed effects and a control for predicted protest participation. Column 4 adds an interaction term between treatment and predicted protest participation in addition to the level of predicted protest participation. Predicted protest participation is constructed by regressing an indicator for planned turnout in 2017 on gender, age, monthly income, expected income at age 40, amount of real estate owned, and an indicator for whether the individual had attended a protest in the past. Standard errors clustered at the treatment cell level.

Table C.20: Heterogeneity with respect to cell treatment intensity (target intensity)

	Protest participation in July 2018		
	(1)	(2)	(3)
Treatment × share treated in cell	0.232***	0.181**	0.178**
	(0.071)	(0.079)	(0.078)
p-value (permutation test)	0.002	0.013	0.022
Treatment	−0.091**	−0.056	−0.055
	(0.039)	(0.036)	(0.035)
p-value (permutation test)	0.018	0.102	0.113
Share treated in cell	−0.032	-	-
	(0.023)	-	-
p-value (permutation test)	0.172	-	-
Treatment cell FEs	No	Yes	Yes
Control for predicted protest participation	No	No	Yes
Observations	849	849	849
DV mean (control grp.)	0.025	0.025	0.025
DV std. dev. (control grp.)	0.156	0.156	0.156
DV mean (all)	0.045	0.045	0.045
DV std. dev. (all)	0.207	0.207	0.207

Notes: Table reports estimated coefficients from regressions of protest turnout in July 2018 on a treatment indicator (the omitted control group is the union of the placebo treatment and pure control groups), the individual's cell's treatment intensity, and the interaction of the two. Column 2 includes controls for a full set of treatment cell fixed effects (thus absorbing the treatment cell intensity variable). Column 3 includes controls for a full set of treatment cell fixed effects and a control for predicted protest participation. Predicted protest participation is constructed by regressing an indicator for planned turnout in 2017 on gender, age, monthly income, expected income at age 40, amount of real estate owned, and an indicator for whether the individual had attended a protest in the past. Standard errors clustered at the treatment cell level.

Table C.21: Heterogeneity by cell treatment intensity: robustness to imbalanced characteristics

	Protest participation in July 2018				
	(1)	(2)	(3)	(4)	(5)
Treatment	-0.030^{***}	-0.047	-0.033	-0.092^{**}	-0.034^{*}
	(0.011)	(0.032)	(0.021)	(0.044)	(0.020)
p-value (permutation test)	0.013	0.221	0.228	0.043	0.151
Treatment × 50intensity	0.058^{***}	0.068^{**}	0.059^{**}	0.059	0.062^{**}
	(0.017)	(0.027)	(0.026)	(0.038)	(0.026)
p-value (permutation test)	0.022	0.039	0.055	0.161	0.042
Treatment × 75intensity	0.106^{***}	0.122^{***}	0.116^{***}	0.122^{**}	0.118^{***}
	(0.028)	(0.040)	(0.040)	(0.050)	(0.038)
p-value (permutation test)	0.007	0.003	0.009	0.011	0.013
Treatment cell FEs	Yes	Yes	Yes	Yes	Yes
Control for predicted protest participation	Yes	Yes	Yes	Yes	Yes
Control for treatment × male	No	Yes	No	No	No
Control for treatment × birth year	No	No	Yes	No	No
Control for treatment × English-language HS	No	No	No	Yes	No
Control for treatment × # real estate owned	No	No	No	No	Yes
Observations	849	849	849	849	849
p-value (Treatment=Treatment×50)	0.000	0.011	0.011	0.012	0.006
p-value (Treatment=Treatment×75)	0.000	0.002	0.000	0.001	0.009
p-value (Treatment×50=Treatment×75)	0.143	0.278	0.232	0.314	0.216
DV mean (control grp.)	0.025	0.025	0.025	0.025	0.025
DV std. dev. (control grp.)	0.156	0.156	0.156	0.156	0.156
DV mean (all)	0.045	0.045	0.045	0.045	0.045
DV std. dev. (all)	0.207	0.207	0.207	0.207	0.207

Notes: Table reports estimated coefficients from regressions of protest turnout in July 2018 on a treatment indicator (the omitted control group is the union of the placebo treatment and pure control groups), the individual's cell's treatment intensity, and the interaction of the two. Column 1 reports the "baseline" specification from Column 3 of Table 8 in the main text. Column 2 includes an indicator for the respondent being male and the interaction with the main treatment. Column 3 includes birth year (scaled to a standard normal distribution) and the interaction with the main treatment. Column 4 includes an indicator for the respondent having attended an English-language high school and the interaction with the main treatment. Column 5 includes the number of real estate properties owned by the respondent's parents (scaled to a standard normal distribution) and the interaction with the main treatment. Predicted protest participation is constructed by regressing an indicator for planned turnout in 2017 on gender, age, monthly income, expected income at age 40, amount of real estate owned, and an indicator for whether the individual had attended a protest in the past. Standard errors clustered at the treatment cell level.

Table C.22: Heterogeneity with respect to cell treatment intensity (empirical intensity)

	Protest participation in July 2018		
	(1)	(2)	(3)
Treatment × share treated in cell	0.122	0.083	0.080
	(0.080)	(0.094)	(0.094)
p-value (permutation test)	0.112	0.285	0.301
Treatment	−0.021	0.003	0.005
	(0.051)	(0.055)	(0.055)
p-value (permutation test)	0.378	0.612	0.517
Share treated in cell	−0.029	-	-
	(0.025)	-	-
p-value (permutation test)	0.216	-	-
Treatment cell FEs	No	Yes	Yes
Control for predicted protest participation	No	No	Yes
Observations	849	849	849
DV mean (control grp.)	0.025	0.025	0.025
DV std. dev. (control grp.)	0.156	0.156	0.156
DV mean (all)	0.045	0.045	0.045
DV std. dev. (all)	0.207	0.207	0.207

Notes: Table reports estimated coefficients from regressions of protest turnout in July 2018 on a treatment indicator (the omitted control group is the union of the placebo treatment and pure control groups), the individual's cell's treatment intensity, and the interaction of the two. Column 2 includes controls for a full set of treatment cell fixed effects (thus absorbing the treatment cell intensity variable). Column 3 includes controls for a full set of treatment cell fixed effects and a control for predicted protest participation. Predicted protest participation is constructed by regressing an indicator for planned turnout in 2017 on gender, age, monthly income, expected income at age 40, amount of real estate owned, and an indicator for whether the individual had attended a protest in the past. Standard errors clustered at the treatment cell level.

Table C.23: Heterogeneity with respect to cell treatment intensity (semiparametric specification, reweighted sample)

	Protest participation in July 2018			
	(1)	(2)	(3)	(4)
Treatment	-0.030^{***}	-0.034^{*}	-0.033^{*}	-0.046
	(0.011)	(0.019)	(0.019)	(0.035)
p-value (permutation test)	0.011	0.016	0.033	0.053
Treatment $\times$ 50intensity	0.058^{***}	0.062^{***}	0.062^{***}	0.063^{***}
	(0.017)	(0.024)	(0.024)	(0.023)
p-value (permutation test)	0.025	0.043	0.047	0.068
Treatment $\times$ 75intensity	0.106^{***}	0.118^{***}	0.117^{***}	0.118^{***}
	(0.028)	(0.039)	(0.038)	(0.039)
p-value (permutation test)	0.011	0.008	0.007	0.522
Treatment cell FEs	No	Yes	Yes	Yes
Control for predicted protest participation	No	No	Yes	Yes (interacted)
Observations	849	849	849	849
p-value (Treatment=Treatment$\times$50)	0.000	0.000	0.000	0.000
p-value (Treatment=Treatment$\times$75)	0.001	0.000	0.002	0.012
p-value (Treatment$\times$50=Treatment$\times$75)	0.142	0.221	0.221	0.214
DV mean (control grp.)	0.025	0.025	0.025	0.025
DV std. dev. (control grp.)	0.155	0.155	0.155	0.155
DV mean (all)	0.044	0.044	0.044	0.044
DV std. dev. (all)	0.206	0.206	0.206	0.206

Notes: Table reports estimated coefficients from regressions of protest turnout in July 2018 on a treatment indicator (the omitted control group is the union of the placebo treatment and pure control groups), the individual's cell's treatment intensity, and the interaction of the two. Column 2 includes controls for a full set of treatment cell fixed effects. Column 3 includes controls for a full set of treatment cell fixed effects and a control for predicted protest participation. Column 4 adds an interaction term between treatment and predicted protest participation in addition to the level of predicted protest participation. Predicted protest participation is constructed by regressing an indicator for planned turnout in 2017 on gender, age, monthly income, expected income at age 40, amount of real estate owned, and an indicator for whether the individual had attended a protest in the past. Standard errors clustered at the treatment cell level. Observations re-weighted to match the sample of individuals who completed at least one wave of the study on observables.

Table C.24: Heterogeneity with respect to cell treatment intensity (target intensity, reweighted sample)

	Protest participation in July 2018		
	(1)	(2)	(3)
Treatment × share treated in cell	0.232***	0.183**	0.179**
	(0.071)	(0.077)	(0.076)
p-value (permutation test)	0.004	0.012	0.030
Treatment	−0.090**	−0.058	−0.056
	(0.038)	(0.035)	(0.035)
p-value (permutation test)	0.022	0.114	0.125
Share treated in cell	−0.032	-	-
	(0.022)	-	-
p-value (permutation test)	0.219	-	-
Treatment cell FEs	No	Yes	Yes
Control for predicted protest participation	No	No	Yes
Observations	849	849	849
DV mean (control grp.)	0.025	0.025	0.025
DV std. dev. (control grp.)	0.156	0.156	0.156
DV mean (all)	0.045	0.045	0.045
DV std. dev. (all)	0.207	0.207	0.207

Notes: Table reports estimated coefficients from regressions of protest turnout in July 2018 on a treatment indicator (the omitted control group is the union of the placebo treatment and pure control groups), the individual's cell's treatment intensity, and the interaction of the two. Column 2 includes controls for a full set of treatment cell fixed effects (thus absorbing the treatment cell intensity variable). Column 3 includes controls for a full set of treatment cell fixed effects and a control for predicted protest participation. Predicted protest participation is constructed by regressing an indicator for planned turnout in 2017 on gender, age, monthly income, expected income at age 40, amount of real estate owned, and an indicator for whether the individual had attended a protest in the past. Standard errors clustered at the treatment cell level. Observations re-weighted to match the sample of individuals who completed at least one wave of the study on observables.

Table C.25: Heterogeneity with respect to cell treatment intensity (empirical intensity, reweighted sample)

	Protest participation in July 2018		
	(1)	(2)	(3)
Treatment × share treated in cell	0.127	0.091	0.087
	(0.079)	(0.091)	(0.091)
p-value (permutation test)	0.141	0.266	0.287
Treatment	−0.024	−0.001	0.000
	(0.050)	(0.054)	(0.053)
p-value (permutation test)	0.413	0.519	0.531
Share treated in cell	−0.029	-	-
	(0.025)	-	-
p-value (permutation test)	0.197	-	-
Treatment cell FEs	No	Yes	Yes
Control for predicted protest participation	No	No	Yes
Observations	849	849	849
DV mean (control grp.)	0.025	0.025	0.025
DV std. dev. (control grp.)	0.156	0.156	0.156
DV mean (all)	0.045	0.045	0.045
DV std. dev. (all)	0.207	0.207	0.207

Notes: Table reports estimated coefficients from regressions of protest turnout in July 2018 on a treatment indicator (the omitted control group is the union of the placebo treatment and pure control groups), the individual's cell's treatment intensity, and the interaction of the two. Column 2 includes controls for a full set of treatment cell fixed effects (thus absorbing the treatment cell intensity variable). Column 3 includes controls for a full set of treatment cell fixed effects and a control for predicted protest participation. Predicted protest participation is constructed by regressing an indicator for planned turnout in 2017 on gender, age, monthly income, expected income at age 40, amount of real estate owned, and an indicator for whether the individual had attended a protest in the past. Standard errors clustered at the treatment cell level. Observations re-weighted to match the sample of individuals who completed at least one wave of the study on observables.

Table C.26: Effects on planned July 2018 protest participation

	Plan to participate in July 2018 protest		
	(1)	(2)	(3)
Treatment	−0.021	−0.020	−0.021
	(0.021)	(0.024)	(0.025)
p-value (permutation test)	0.315	0.415	0.405
Treatment cell FEs	No	Yes	Yes
Control for predicted protest participation	No	No	Yes
Observations	849	849	849
DV mean (control grp.)	0.100	0.100	0.100
DV std. dev. (control grp.)	0.300	0.300	0.300
DV mean (all)	0.091	0.091	0.091
DV std. dev. (all)	0.287	0.287	0.287

Notes: Table reports estimated coefficients from regressions of self-reported planned turnout in the July 2018 march (reported in June 2018) on a treatment indicator (the omitted control group is the union of the placebo treatment and pure control groups). Column 2 includes controls for a full set of treatment cell fixed effects. Column 3 further includes a control for predicted protest participation. Predicted protest participation is constructed by regressing an indicator for planned turnout in 2017 on gender, age, monthly income, expected income at age 40, amount of real estate owned, and an indicator for whether the individual had attended a protest in the past. Standard errors clustered at the treatment cell level.

Table C.27: Formation of new friendships: heterogeneity with respect to cell treatment intensity (semiparametric specification)

	New friendships in 2018			
	(1)	(2)	(3)	(4)
Treatment	-0.061^{***}	-0.037^{*}	-0.036^{*}	-0.053
	(0.017)	(0.019)	(0.020)	(0.044)
p-value (permutation test)	0.004	0.077	0.068	0.196
Treatment $\times$ 50intensity	0.108^{***}	0.073^{**}	0.073^{**}	0.075^{**}
	(0.030)	(0.032)	(0.033)	(0.033)
p-value (permutation test)	0.005	0.034	0.029	0.033
Treatment $\times$ 75intensity	0.086^{***}	0.063	0.058	0.060
	(0.032)	(0.040)	(0.041)	(0.041)
p-value (permutation test)	0.012	0.189	0.347	0.206
Treatment cell FEs	No	Yes	Yes	Yes
Control for predicted protest participation	No	No	Yes	Yes (interacted)
Observations	849	849	849	849
p-value (Treatment=Treatment$\times$50)	0.000	0.000	0.000	0.000
p-value (Treatment=Treatment$\times$75)	0.000	0.002	0.004	0.003
p-value (Treatment$\times$50=Treatment$\times$75)	0.301	0.528	0.526	0.526
DV mean (control grp.)	0.025	0.025	0.025	0.025
DV std. dev. (control grp.)	0.156	0.156	0.156	0.156
DV mean (all)	0.045	0.045	0.045	0.045
DV std. dev. (all)	0.207	0.207	0.207	0.207

Notes: Table reports estimated coefficients from regressions of an indicator of self reported new political friendship formation between July 2017 and July 2018 on a treatment indicator (the omitted control group is the union of the placebo treatment and pure control groups), the individual's cell's treatment intensity, and the interaction of the two. Column 2 includes controls for a full set of treatment cell fixed effects. Column 3 includes controls for a full set of treatment cell fixed effects and a control for predicted protest participation. Column 4 adds an interaction term between treatment and predicted protest participation in addition to the level of predicted protest participation. Predicted protest participation is constructed by regressing an indicator for planned turnout in 2017 on gender, age, monthly income, expected income at age 40, amount of real estate owned, and an indicator for whether the individual had attended a protest in the past. Standard errors clustered at the treatment cell level.

Table C.28: Formation of new friendships: heterogeneity with respect to cell treatment intensity (semiparametric specification, reweighted sample)

	New friendships in 2018			
	(1)	(2)	(3)	(4)
Treatment	-0.061^{***}	-0.037^{*}	-0.036^{*}	-0.053
	(0.017)	(0.019)	(0.020)	(0.044)
p-value (permutation test)	0.006	0.059	0.074	0.207
Treatment $\times$ 50intensity	0.108^{***}	0.073^{**}	0.073^{**}	0.075^{**}
	(0.030)	(0.032)	(0.033)	(0.033)
p-value (permutation test)	0.010	0.041	0.035	0.042
Treatment $\times$ 75intensity	0.086^{***}	0.063	0.058	0.060
	(0.032)	(0.040)	(0.041)	(0.041)
p-value (permutation test)	0.016	0.203	0.301	0.222
Treatment cell FEs	No	Yes	Yes	Yes
Control for predicted protest participation	No	No	Yes	Yes (interacted)
Observations	849	849	849	849
p-value (Treatment=Treatment$\times$50)	0.000	0.000	0.000	0.000
p-value (Treatment=Treatment$\times$75)	0.000	0.002	0.004	0.003
p-value (Treatment$\times$50=Treatment$\times$75)	0.301	0.528	0.526	0.526
DV mean (control grp.)	0.025	0.025	0.025	0.025
DV std. dev. (control grp.)	0.155	0.155	0.155	0.155
DV mean (all)	0.044	0.044	0.044	0.044
DV std. dev. (all)	0.206	0.206	0.206	0.206

Notes: Table reports estimated coefficients from regressions of an indicator of self reported new political friendship formation between July 2017 and July 2018 on a treatment indicator (the omitted control group is the union of the placebo treatment and pure control groups), the individual's cell's treatment intensity, and the interaction of the two. Column 2 includes controls for a full set of treatment cell fixed effects. Column 3 includes controls for a full set of treatment cell fixed effects and a control for predicted protest participation. Column 4 adds an interaction term between treatment and predicted protest participation in addition to the level of predicted protest participation. Predicted protest participation is constructed by regressing an indicator for planned turnout in 2017 on gender, age, monthly income, expected income at age 40, amount of real estate owned, and an indicator for whether the individual had attended a protest in the past. Standard errors clustered at the treatment cell level. Observations re-weighted to match the sample of individuals who completed at least one wave of the study on observables.

Table C.29: Heterogeneity in friendship formation by treatment intensity: robustness to imbalanced characteristics

	New friendships in 2018				
	(1)	(2)	(3)	(4)	(5)
Treatment	−0.036*	−0.074**	−0.034	−0.066	−0.029
	(0.020)	(0.036)	(0.028)	(0.058)	(0.023)
p-value (permutation test)	0.012	0.223	0.214	0.041	0.163
Treatment × 50intensity	0.073**	0.090***	0.067*	0.085**	0.065*
	(0.033)	(0.034)	(0.038)	(0.038)	(0.036)
p-value (permutation test)	0.016	0.044	0.048	0.176	0.039
Treatment × 75intensity	0.058	0.073*	0.058	0.067	0.051
	(0.041)	(0.040)	(0.047)	(0.052)	(0.041)
p-value (permutation test)	0.012	0.002	0.012	0.020	0.016
Treatment cell FEs	Yes	Yes	Yes	Yes	Yes
Control for predicted protest participation	Yes	Yes	Yes	Yes	Yes
Control for treatment × male	No	Yes	No	No	No
Control for treatment × birth year	No	No	Yes	No	No
Control for treatment × English-language HS	No	No	No	Yes	No
Control for treatment × # real estate owned	No	No	No	No	Yes
Observations	849	849	849	849	849
p-value (Treatment=Treatment×50)	0.000	0.012	0.012	0.012	0.006
p-value (Treatment=Treatment×75)	0.000	0.002	0.000	0.001	0.010
p-value (Treatment×50=Treatment×75)	0.144	0.280	0.230	0.313	0.216
DV mean (control grp.)	0.025	0.025	0.025	0.025	0.025
DV std. dev. (control grp.)	0.156	0.156	0.156	0.156	0.156
DV mean (all)	0.045	0.045	0.045	0.045	0.045
DV std. dev. (all)	0.207	0.207	0.207	0.207	0.207

Notes: Table reports estimated coefficients from regressions of an indicator of self reported new political friendship formation between July 2017 and July 2018 on a treatment indicator (the omitted control group is the union of the placebo treatment and pure control groups), the individual's cell's treatment intensity, and the interaction of the two. Column 1 reports the "baseline" specification from Column 3 of Table 8 in the main text. Column 2 includes an indicator for the respondent being male and the interaction with the main treatment. Column 3 includes birth year (scaled to a standard normal distribution) and the interaction with the main treatment. Column 4 includes an indicator for the respondent having attended an English-language high school and the interaction with the main treatment. Column 5 includes the number of real estate properties owned by the respondent's parents (scaled to a standard normal distribution) and the interaction with the main treatment. Predicted protest participation is constructed by regressing an indicator for planned turnout in 2017 on gender, age, monthly income, expected income at age 40, amount of real estate owned, and an indicator for whether the individual had attended a protest in the past. Standard errors clustered at the treatment cell level.

Appendix D Experimental materials

D.1 Full text of survey questions used for Figure 3

The z-score index for own political beliefs encompasses the following questions:[1]

1	By 2025, which of the following outcomes regarding Hong Kong's political institutions do you think is most likely? (complete integration with Mainland China vs. fully separate institutions)
2	For the most likely outcome you picked in the 2025 outcome above, how certain do you think it will actually happen? (completely uncertain vs. completely certain)
3	By 2050, which of the following outcomes regarding Hong Kong's political institutions do you think is most likely? (complete integration with Mainland China vs. fully separate institutions)
4	For the most likely outcome you picked in the 2050 outcome above, how certain do you think it will actually happen? (completely uncertain vs. completely certain)

The z-score index for own political preferences encompasses the following questions:

1	How important is it for you to live in a country that is governed democratically, even if democracy makes no significant difference in the socioeconomic status of you, your family, or the country as a whole? (not at all important vs. absolutely important)
2	Where do you stand in terms of your political attitudes? (pro-democracy vs. pro-establishment / pro-Beijing)
3	As it is now, is the Chinese Communist Party legitimate in ruling over Hong Kong? (not at all legitimate vs. completely legitimate)
4	To what extent do you think Hong Kong should be an independent nation? (Hong Kong should not be independent at all vs. Hong Kong should definitely be independent)

The z-score index for second-order beliefs (about the political preferences of other Hong Kong citizens) encompasses the following questions:

1	Some people in Hong Kong are in strong support of its independence. To what extent do you think that these people who hold such beliefs are afraid of expressing their beliefs in public? (not at all afraid vs. extremely afraid)
{2-4}	What is the average answer that *all citizens of Hong Kong* would have chosen in the following questions?
2	How important is it for you to live in a country that is governed democratically, even if democracy makes no significant difference in the socioeconomic status of you, your family, or the country as a whole?
3	As it is now, is the Chinese Communist Party legitimate in ruling over Hong Kong? (not at all legitimate vs. completely legitimate)
4	To what extent do you think Hong Kong should be an independent nation? (Hong Kong should not be independent at all vs. Hong Kong should definitely be independent)

[1] We code answers as optimistic/"anti-authoritarian" if respondents predict that full independence or separate institutions are most likely, and express a degree of certainty of 5 (out of 10) or more.

D.2 Recruitment email script *(June 2017)*

Dear students,

Greetings! Hope the summer is going well!

We are researchers from HKUST, University of Chicago, University of Munich, Stanford University, and University of California at Berkeley. We are conducting this research project in order to better understand attitudes and preferences among college students in Hong Kong. We'd love to invite you to participate in this study, which will take place online.

The survey consists of 2 main parts. You will start Part 1 of the survey today, which will take about 30 minutes to complete. Part 2 of the survey will start 2 weeks later, which will take another 30 minutes to complete. When you complete both parts of the survey, you will receive HKD 300 as compensation. Based on the choices you make during the survey, you may earn an additional bonus payment of up to HKD 200.

All data collected from the survey will be for academic research only. We abid by academic regulations in Hong Kong, United States, and the European Union to protect the rights and privacy of all study participants.

Please note that in order to be eligible to participate in this study, you need to be: (a) currently registered undergraduate student at HKUST; (b) above 18 years old; and (c) either a resident of Hong Kong SAR or citizen of People's Republic of China.

To begin the survey, please click on the following link: *[survey link]*

Feel free to contact us at jzproject@ust.hk if you have questions and/or concerns regarding participating in this study.

We look forward to your participation!

With regards,
HK Student Attitudes and Preferences Research Team:
Leonardo Bursztyn (University of Chicago)
Davide Cantoni (University of Munich)
David Yang (Stanford University)
Noam Yuchtman (University of California, Berkeley)
Jane Zhang (HKUST)

D.3 Baseline survey module *(June 2017)*

ANTI-AUTHORITARIANISM	
Panel A: Responses to direct questions	
Category A.1: *Support for democracy*	
A.1.1	How important is it for you to live in a country that is governed democratically, even if democracy makes no significant difference in the socioeconomic status of you, your family, or the country as a whole? (0 = not at all important; 10 = absolutely important)
A.1.2	Do you think that universal and truly democratic elections play an important role in determining whether you and your family are able to make a better living? (0 = not at all important; 10 = extremely important)
A.1.3	Do you think that universal and truly democratic elections are an important factor in whether or not a country's economy can develop successfully? (0 = not at all important; 10 = extremely important)
A.1.4	Where do you stand in terms of your political attitudes? (0 = pro-establishment / pro-Beijing; 10 = pro-Democracy)
A.1.5	Where do you stand in terms of the following two statements? (0 = I think that only those who demonstrate patriotism towards Beijing should be allowed to become candidates for the Chief Executive; 10 = I think that no restriction should be imposed in terms of who are allowed to become candidates during the Chief Executive election)
Category A.2: *Support for HK independence*	
A.2.1	Where do you stand in terms of the following two statements? (0 = I would like to see Hong Kong be fully integrated with the political institutions of Mainland China; 10 = I would like Hong Kong to be separate and have its own political institutions)
A.2.2	Where do you stand in terms of the following two statements? (0 = I would like to see Hong Kong be fully integrated with the economic institutions of Mainland China; 10 = I would like Hong Kong to be separate and have its own economic institutions)
A.2.3	As it is now, is the Chinese Communist Party legitimate in ruling over Hong Kong? (0 = completely legitimate; 10 = not at all legitimate)
A.2.4	If the Chinese Communist Party undergoes significant reform and Mainland China adopts truly democratic political institutions, do you think the Chinese central government can be a legitimate ruling government over Hong Kong? (0 = completely legitimate; 10 = not at all legitimate)
A.2.5	To what extent do you think Hong Kong should be an independent nation? (0 = HK should not be independent at all; 10 = HK should definitely be independent)
A.2.6	To what extent do you think Hong Kong society should discuss and debate the potential prospect of its independence? (0 = independence should not be discussed at all; 10 = important and beneficial to have open discussion on independence)
Category A.3: *HK identity: self-reported*	
A.3.1	Where do you stand in terms of your national identity? (0 = Chinese; 10 = Hong Kongese)
A.3.2	Where do you stand in terms of your cultural identity? (0 = Chinese; 10 = Hong Kongese)
A.3.3	How important is being a Hong Kongese citizen to you? (0 = not at all important; 10 = extremely important)
A.3.4	How important is being a Chinese citizen to you? (0 = extremely important; 10 = not at all important)
Category A.4: *Unhappiness with political status quo*	

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A.4.1	How democratically is Hong Kong being governed today? (0 = completely democratic; 10 = not at all democratic)
A.4.2	How would you rate the political system in Hong Kong between 1997 and 2012, relative to that prior to 1997? (0 = extremely good; 10 = extremely bad)
A.4.3	How would you rate the political system in Hong Kong today, relative to that prior to 1997? (0 = extremely good; 10 = extremely bad)
A.4.4	All things considered, how satisfied are you with your life as a whole these days? (0 = completely satisfied; 10 = completely dissatisfied)
Category A.5: *Anti-CCP views on current events*	
A.5.1	To what degree do believe that the electoral reform package proposed by Mainland China is democratic? (0 = completely democratic; 10 = completely undemocratic)
A.5.2	Do you support the Legislative Council's veto decision? (0 = completely against Legco's decision; 10 = completely support Legco's decision)
A.5.3	Between October and December 2015, multiple booksellers from Causeway Bay Books have gone missing. Many suspect that the mainland Chinese government was involved. If this is true, what do you think of mainland Chinese government's action? (0 = completely legitimate, in accordance with Basic Law; 10 = completely illegitimate, violation against Basic Law)
Panel B: Self-reported behavior and real-stakes decisions	
B.1	Have you participated in the Occupy Central / Umbrella Revolution during September - December 2014?
B.2	Which party are you are you planning to vote for, during the 2016 Hong Kong Legislative Council Election? (0 = pro-Beijing parties; 1 = pro-democracy parties)
B.3	Are you planning to participate in the July 1st March in 2016? (0 = no, or not sure yet but more unlikely than yes; 1 = yes, or not sure yet but more likely than not)
B.4.1-4	Average amount allocated to HK local partner in national identity games, relative to the amount allocated to Mainland Chinese
B.5	How much money from your participation fee do you want to contribute to Demosisto? (0 = none; 1 = positive amount)
FUNDAMENTAL FACTORS	
Panel C: Economic preferences	
Category C.1: *Risk tolerance*	
C.1.1	Please tell me, in general, how willing or unwilling you are to take risks? (0 = completely unwilling to take risks; 10 = very willing to take risks)
C.1.2	Certainty equivalent from step-wise lottery choices (what would you prefer: a draw with 50 percent chance of receiving 300 HKD, and the same 50 percent chance of receiving nothing, or the amount of xxx HKD as a sure payment?)
C.1.3	Eckel and Grossman (2002) lottery decisions: for the following lottery options, please choose one that you like the most? *[incentivized]*
Category C.2: *Patience*	
C.2.1	How willing are you to give up something that is beneficial for you today in order to benefit more from that in the future? (0 = completely unwilling; 10 = very willing)
C.2.2	I tend to postpone tasks even if I know it would be better to do them right away (0 = describes me perfectly; 10 = does not describe me at all)

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C.2.3	Patience index from a step-wise intertemporal choices (would you rather receive 100 HKD today or xxx HKD in 12 months?)
Category C.3: *Altruism*	
C.3.1	How willing are you to give to good causes without expecting anything in return? (0 = completely unwilling; 10 = very willing)
C.3.2	Today you unexpectedly received 10,000 HKD. How much of this amount would you donate to a good cause? (value between 0 and 10,000)
Category C.4: *Reciprocity*	
C.4.1	When someone does me a favor I am willing to return it (0 = describes me perfectly; 10 = does not describe me at all)
C.4.2	I assume that people have only the best intentions (0 = does not describe me at all; 10 = describes me perfectly)
C.4.3	When a stranger helps you, would you be willing to give one of the following presents to the stranger as a thank-you gift?
C.4.4	How willing are you to punish someone who treats you unfairly, even if there may be costs for you? (0 = completely unwilling; 10 = very willing)
C.4.5	How willing are you to punish someone who treats others unfairly, even if there may be costs for you? (0 = completely unwilling; 10 = very willing)
C.4.6	If I am treated very unjustly, I will take revenge at the first occasion, even if there is a cost to do so (0 = describes me perfectly; 10 = does not describe me at all)
Category C.5: *Preference for redistribution*	
C.5.1-11	Average amount of money allocated to a fellow HK local partner in a series of dictator games *[incentivized]*
Panel D: Personality traits	
Category D.1: *Big 5 - openness*	
D.1.1-5	On each numerical scale that follows, indicate which point is generally more descriptive of you:
D.1.1	1 = no-nonsense; 5 = a dreamer
D.1.2	1 = practical; 5 = theoretical
D.1.3	1 = following authority; 5 = following imagination
D.1.4	1 = seek routine; 5 = seek novelty
D.1.5	1 = prefer things clear-cut; 5 = comfortable with ambiguity
Category D.2: *Big 5 - agreeableness*	
D.2.1-5	On each numerical scale that follows, indicate which point is generally more descriptive of you:
D.2.1	1 = abrupt; 5 = courteous
D.2.2	1 = selfish; 5 = generous
D.2.3	1 = cold; 5 = warm
D.2.4	1 = independent; 5 = team player
D.2.5	1 = skeptical; 5 = trusting
Category D.3: *Big 5 - conscientiousness*	
D.3.1-5	On each numerical scale that follows, indicate which point is generally more descriptive of you:
D.3.1	1 = messy; 5 = neat
D.3.2	1 = open-minded; 5 = decisive
D.3.3	1 = easily distracted; 5 = stay focused
D.3.4	1 = comfortable with chaos; 5 = a preference for order

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D.3.5	1 = procrastinate; 5 = on time
Category D.4: *Big 5 - neuroticism*	
D.4.1-5	On each numerical scale that follows, indicate which point is generally more descriptive of you:
D.4.1	1 = calm; 5 = eager
D.4.2	1 = confident; 5 = cautious
D.4.3	1 = upbeat; 5 = discouraged
D.4.4	1 = don't give a darn; 5 = easily embarrassed
D.4.5	1 = unflappable; 5 = distractible
Category D.5: *Big 5 - extraversion*	
D.5.1-5	On each numerical scale that follows, indicate which point is generally more descriptive of you:
D.5.1	1 = prefer being alone; 5 = prefer being with others
D.5.2	1 = pessimistic; 5 = optimistic
D.5.3	1 = private; 5 = exhibitionist
D.5.4	1 = cool; 5 = outgoing
D.5.5	1 = thoughtful; 5 = conversational
Panel E: Cognitive ability	
Category E.1: *Cognitive reflection test*	
E.1.1	A bat and a ball cost $1.10 in total. The bat costs $1.00 more than the ball. How much does the ball cost?
E.1.2	If it takes 5 machines 5 minutes to make 5 widgets, how long would it take 100 machines to make 100 widgets?
E.1.3	In a lake, there is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover half of the lake?
Category E.2: *University GPA*	
E.2.1	GPA at HKUST, demeaned by major/program
Panel F: Economic status	
Category F.1: *Household economic & social status*	
F.1.1	During the past 12 months, what's the average monthly income of your family?
F.1.2	How many properties in HK do your parents currently own in total?
F.1.3	Father's highest educational attainment is above high school
F.1.4	Mother's highest educational attainment is above high school
Category F.2: *Student's projected economic status*	
F.2.1	Median income of HKUST graduates in same major/program (as of 2014)
F.2.2	At age 40, where do you see yourself financially, relative to your classmates at HKUST? (1 = at the very bottom; 7 = at the very top)
Panel G: Background characteristics	
G.1	Gender (0 = female; 1 = male)
G.2	Birth year
Category G.3: *HK-oriented childhood environment*	
G.3.1	Generations since family migrated to HK (1 = self-migrated; 4 = great grandparents migrated)
G.3.2	Attended HK high school using English as language of instruction

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Category G.4: *Religiosity*	
G.4.1	Religiosity (0 = atheist; 1 = religious)

SIMULTANEOUSLY DETERMINED VARIABLES

Panel H: Beliefs about politics	
Category H.1: *Beliefs about future institutions*	
H.1.1	Optimistic about HK's political institutions in 2025 (believe that Hong Kong will have separate and completely different political institutions from those of Mainland China by 2025, with high certainty)
H.1.2	Optimistic about HK's political institutions in 2050 (believe that Hong Kong will have separate and completely different political institutions from those of Mainland China by 2050, with high certainty)
Category H.2: *Beliefs about protest efficacy*	
H.2.1	Probability of achieving democratic institutions in HK if protests occur, relative to the probability if no protest occurs (based on separate elicitation of probability of various protest scenarios and conditional probabilities of democratic institutions under these scenarios)
Panel I: Beliefs about HKUST students	
Category I.1: *Beliefs about HKUST students: support for democracy*	
I.1.1-2	What is the average answer that other participants from HKUST in this study have chosen?
I.1.1	Corresponding question: A.1.4
I.1.2	Corresponding question: A.1.5
Category I.2: *Beliefs about HKUST students: support for HK independence*	
I.2.1-3	What is the average answer that other participants from HKUST in this study have chosen?
I.2.1	Corresponding question: A.2.1
I.2.2	Corresponding question: A.2.2
I.2.3	Corresponding question: A.2.5
Category I.3: *Beliefs about HKUST students: HK identity*	
I.3.1-2	What is the average answer that other participants from HKUST in this study have chosen?
I.3.1	Corresponding question: A.3.1
I.3.2	Corresponding question: A.3.2
Category I.4: *Beliefs about HKUST students: unhappiness with political status quo*	
I.4.1-2	What is the average answer that other participants from HKUST in this study have chosen?
I.4.1	Corresponding question: A.4.1
I.4.2	Corresponding question: A.4.4
Category I.5: *Beliefs about HKUST students: aggressive pursuit of political rights*	
I.5.1	What is the average answer that other participants from HKUST in this study have chosen? Corresponding question: A.6.2
Panel J: Social life	
Category J.1: *Political social network*	

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J.1.1	When you get together with your friends, would you say you discuss political matters frequently, occasionally, or never? (0 = never; 10 = frequently)
J.1.2	When you, yourself, hold a strong opinion, do you ever find yourself persuading your friends, relatives or fellow schoolmates to share your views or not? If so, does this happen often, from time to time, or rarely? (0 = never; 10 = always)
J.1.3	Do you know any direct relative who has participated in the Occupy Central movement in 2014?
J.1.4	Do you know any schoolmate who has participated in the Occupy Central movement in 2014?
J.1.5	Do you know any friend outside of school who has participated in the Occupy Central movement in 2014?
J.1.6	Has any of your direct relatives, schoolmates, or friends outside of school persuaded you to support Occupy Central (or anti-Occupy Central)?
J.1.7	How much do you know, on average, about your direct relatives' political orientation? (0 = do not know at all; 10 = very familiar and certain)
J.1.8	How much do you know, on average, about your schoolmates' political orientation? (0 = do not know at all; 10 = very familiar and certain)
J.1.9	How much do you know, on average, about your friends' political orientation? (0 = do not know at all; 10 = very familiar and certain)
Category J.2: *Sociability*	
J.2.1	Total number of friends at HKUST elicited (Please list the names of your friends at HKUST, in the order from those whom you interact with most frequently, to those whom you interact with less frequently. Please list as many names as you want – there is no space limit)
J.2.2	Current relationship status is non-single
Panel K: Beliefs about close friends	
Category K.1: *Beliefs about close friends: support for democracy*	
K.1.1-2	What is the average answer that 5 of your closest friends at HKUST would have chosen?
K.1.1	Corresponding question: A.1.4
K.1.2	Corresponding question: A.1.5
Category K.2: *Beliefs about close friends: support for HK independence*	
K.2.1-3	What is the average answer that 5 of your closest friends at HKUST would have chosen?
K.2.1	Corresponding question: A.2.1
K.2.2	Corresponding question: A.2.2
K.2.3	Corresponding question: A.2.5
Category K.3: *Beliefs about close friends: HK identity*	
K.3.1-2	What is the average answer that 5 of your closest friends at HKUST would have chosen?
K.3.1	Corresponding question: A.3.1
K.3.2	Corresponding question: A.3.2
Category K.4: *Beliefs about close friends: unhappiness with political status quo*	
K.4.1-2	What is the average answer that 5 of your closest friends at HKUST would have chosen?
K.4.1	Corresponding question: A.4.1
K.4.2	Corresponding question: A.4.4
Category K.5: *Beliefs about close friends: aggressive pursuit of political rights*	
K.5.1	What is the average answer that 5 of your closest friends at HKUST would have chosen? Corresponding question: A.6.2

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Panel L: Media consumption	
Category L.1: *Frequency of news consumption*	
L.1.1	How often do you browse the internet to read about news and current events? (1 = never; 6 = multiple times a day)
Category L.2: *Pro-democratic source of media*	
L.2.1	What are the top 3 internet websites that you regularly browse to consume information? (Select HK local websites among the top 2 choices)
L.2.2	What are the top 3 news outlets that you regularly read for news (including the website, hard-copies of the newspaper, etc.)? (Select pro-democracy news outlets in HK among the top 2 choices)
Panel M: Political interest and knowledge	
Category M.1: *Political interest*	
M.1.1	How interested would you say you are in politics? (0 = not at all interested; 10 = extremely interested)
Category M.2: *Political knowledge*	
M.2.1-4	Able to answer the following questions correctly:
M.2.1	Which of the following is a Democratic Party Legco member?
M.2.2	Which of the following is a pro-Beijing Legco member?
M.2.3	Which of the following is a leader of a newly founded party in HK that focuses on self-determination?
M.2.4	Which of the following is a leader of a newly founded party in HK that focuses on independence?

ADDITIONAL OUTCOME VARIABLES

Panel N: Intensity of political support	
Category N.1: *Aggressive pursuit of political rights*	
N.1.1	What do you think is the consequence of this veto decision, in terms of Hong Kong adopting fully democratic political institutions in the future? (0 = the veto decision is extremely harmful in leading Hong Kong to fully democratic institutions in the future; 10 = the veto decision is extremely beneficial in leading Hong Kong to fully democratic institutions in the future)
N.1.2	Some people support the use of violence to fight for Hong Kong citizens' political rights, while others oppose the use of violence. Where do you stand on this question? (0 = violence can never be justified; 10 = violence is currently justified)

D.4 Post July 1st 2017 protest module *(July 2017)*

[Section: welcome]

[add survey logo here]

Welcome screen: thank you for participating in this follow-up survey, which will take 10 minutes to complete.

You will earn an additional HKD 50 once you complete this short survey, which will be added to your total payment you have earned from the study.

感謝您參與這次跟進調查。調查將花費約 10 分鐘完成。

完成這個簡短的調查後，你將在這個研究獲得的總報酬上，額外獲得 50 港元的報酬。

[Section: July 1st March participation]

1. Did you attend the July 1 2017 March?
   您有出席 2017 年的七一遊行嗎？

   {IF "NO", skip to Q6.}

2. Which political group's crowd did you join during the March?
   (please choose all that apply)

   你加入了哪一個政治團體的隊伍？ （請勾選所有符合的選項）

   公民黨 Civic Party
   民主黨 Democratic Party
   人民力量 People Power
   工黨 Labour Party
   社民連 League of Social Democrats
   街工 Neighbourhood and Worker Service Centre
   新民主同盟 Neo Democrats
   青年新政 Youngspiration
   香港眾志 Demosisto
   熱血公民 Civic Passion
   本土民主前線 Hong Kong Indigenous

科大學生會 HKUST Student Union
科大行動 ProgressUST
學聯 HKFS

普羅政治學院 Proletariat Political Institute
香港花生 HKpeanut
D100 民間電台 D100 Radio
職工盟 Hong Kong Confederation of Trade Unions
小麗民主教室 Siu Lai Democracy Groundwork
土地正義聯盟 Land Justice League
法輪功 Falun Gong
爭取全民退休保障聯席 Alliance for Universal Pension
懇請政府重訂屋宇飼養犬隻條例聯盟 Give Dogs a Home
旺角鳩鳴團 Mong Kok Shopping Revolution
良心之友 Friends of Conscience
撐傘落區 Umbrella Blossom

香港特區成立二十周年慶祝活動 HKSAR Establishment Day celebration events

其他 Others

3. Why did you attend this year's July 1st March?
[please choose all that apply]

a = Many of my friends were attending the March, making it an enjoyable social event
b = Being politically active is an important component of my identity
c = I wanted to send a political signal to those who were not attending the March
d = I believed the March would produce political change

4. Did you persuade your friends to participate in this year's March?
[yes/no]

5. What was your general impression of the March (300 words or less)?
   您對今年七一遊行的總體觀感如何？（請以三百字以內回答）

   {OPEN-ENDED}

6. To the best of your knowledge, how many students your class and major （與你相同主修的同屆同學）at HKUST went to the July 1 March this year?

   {Drop down menu: from 0 to xxx}

7. To what extent did your friends' decision to participate (or not participating) in this year's July 1st March affect your decision?
   0 = not affected by friends' decisions at all
   10 = my decision was entirely based on my friends' decisions

[Section: information about protests]

8. How many people in total do you think *participated* in the July 1st March（七一大遊行）in *2017*?

   {Open-ended question; fill in integer > 0}

9. On July 14th, Hong Kong's High Court ruled that 4 directly-elected members of the Legislative Council are disqualified of their seats. Who are these 4 disqualified LegCo members?
   [pick 4 out of 5]

   LEUNG Kwok-hung 梁國雄
   Nathan LAW Kwun-chung 羅冠聰
   Eddie CHU Hoi Dick 朱凱迪
   LAU Siu-lai 劉小麗
   Edward YIU Chung-yim 姚松炎

[Section: political beliefs and attitudes]

10. By 2025, which of the following outcome regarding Hong Kong's *political* institutions (政治體制) do you think is the *most* likely?
    1. Completely integrated with the political institutions of Mainland China
    2. Not fully integrated with the political institutions of Mainland China, but closer to that of Mainland China than to full democracy
    3. Not fully integrated with the political institutions of Mainland China, but closer to full democracy than to the institutions of Mainland China
    4. Hong Kong has separate and completely different political institution from those of Mainland China

11. For the *most likely* outcome that you picked in previous question (2025 outcome), how certain do you think it will actually happen?
    0 = completely uncertain
    5 = somewhat certain
    10 = completely certain

12. By 2050, which of the following outcomes regarding Hong Kong's *political* institutions (政治體制) do you think is the *most* likely?
    1. Completely integrated with the political institutions of Mainland China
    2. Not fully integrated with the political institutions of Mainland China, but closer to that of Mainland China than to full democracy
    3. Not fully integrated with the political institutions of Mainland China, but closer to full democracy than to the institutions of Mainland China
    4. Hong Kong has separate and completely different political institutions from those of Mainland China

13. For the *most likely* outcome that you picked in previous question (2050 outcome), how certain are you that it will actually happen?
    0 = completely uncertain
    5 = somewhat certain
    10 = completely certain

14. How important is it for you to live in a country that is governed *democratically*, even if democracy makes no significant difference in the socioeconomic status of you, your family, or the country as a whole?
    0 = not at all important
    5 = neutral
    10 = absolutely important

15. Where do you stand in terms of your political attitudes? (支持的政治立場)
    0 = pro-democracy (支持民主派)
    5 = neutral (中立)
    10 = pro-establishment / pro-Beijing (支持建制派)

16. As it is now, is the Chinese Communist Party legitimate in ruling over Hong Kong?
    0 = not at all legitimate
    5 = in between
    10 = completely legitimate

17. To what extent do you think Hong Kong should be an independent nation?
    0 = HK should not be independent at all
    5 = in between
    10 = HK should definitely be independent

[Section: beliefs regarding others]

18. Some people in Hong Kong are in strong support of its independence (香港獨立). To what extent do you think that these people who hold such beliefs are afraid of (害怕) expressing their beliefs in public?

0 = not at all afraid
5 = somewhat afraid
10 = extremely afraid

19. How important is it for you to live in a country that is governed *democratically*, even if democracy makes no significant difference in the socioeconomic status of you, your family, or the country as a whole?
    0 = not at all important
    5 = neutral
    10 absolutely important

    What is the average answer that *all citizens of Hong Kong* would have chosen?
    [Fill in a number, from 0-10]

20. As it is now, is the Chinese Communist Party legitimate in ruling over Hong Kong?
    0 = not at all legitimate
    5 = in between
    10 = completely legitimate

    What is the average answer that *all citizens of Hong Kong* would have chosen?
    [Fill in a number, from 0-10]

21. To what extent do you think Hong Kong should be an independent nation?
    0 = HK should not be independent at all
    5 = in between
    10 = HK should definitely be independent

    What is the average answer that *all citizens of Hong Kong* would have chosen?
    [Fill in a number, from 0-10]

[Section: donation]

Thank you for participating in our study this year.
As promised, you will receive HKD 300 for completing last month's online surveys, as well as the various bonus payments that you may earn throughout the study (including the HKD 50 for participating in today's survey).

We would like to give you the choice of receiving the HKD 300 participation fee directly, or making a contribution to one of the following organizations.

Your participation payment belongs to you, and you should feel absolutely free to receive all of it as a direct payment to you, or to contribute any amount of your payment to the organization you prefer.

We will transfer the amount you indicated to the corresponding organization on your behalf. We will provide you with a receipt from the contribution; your contribution decision will be completely private and anonymous.

Please note this research project is *not* affiliated with any of the following organizations.

感謝你參與我們今年的研究。

按照約定，你將收到 300 港元作為完成上月問卷調查的報酬，以及各項你在研究中獲得的額外報酬（包含今天问卷获得的 50 港元報酬）。

我們想讓你選擇，直接收到 300 港元的報酬，或者将其中一部分捐獻給以下團體之一。

你的報酬是屬於你的，你可以完全自由地決定直接收取全部的報酬，或者捐獻任何數目的金額予你選擇的團體。

我們會代你把你選擇的金額轉帳予你選擇的團體。我們將向你提供收據，而你的捐款決定將維持保密及暱名。

請注意，本研究計劃與所有下列的團體沒有聯繫。

22. Do you want to make a contribution to any of the following organizations from part or all the participation fee (HKD 300) that you have earned?

1 = Demosistō 香港眾志 (https://www.demosisto.hk)
2 = DAB 民建聯 (http://www.dab.org.hk)
3 = None

23. *[Display if previous question's answer is 1 or 2]*
How much of the HKD 300 participation fee do you want to contribute to the group that you chose above?
Please fill in number between 0-300.
{fill in blank, integer 0-300}

[Section: conclusion]

Thank you for participating in today's follow-up survey.

We will email you in a week to inform you the total amount that you have earned throughout the study this summer, as well as additional payment details. The payment will be ***deposited directly to your bank account*** via the ***HKUST Student Information System (SIS)***, as soon as the study concludes.

If you have indicated that you want to make contribution to an organization, we will transfer the amount you indicated on your behalf in approximately 2 weeks, and we will email you a receipt from the contribution.

Thank you again for your support of this study. Feel free to contact us at jzproject@ust.hk if you have questions and/or concerns regarding this study.

D.5 Pre July 1st 2018 protest module *(June 2018)*

[Section: welcome]

[add survey logo here]

Thank you for participating in this follow-up survey, which will take less than 10 minutes to complete. Your continuous participation in this year's survey is extremely important to validity of our academic research.

You will earn HKD 100 once you have completed today's survey. There will be a 2nd part of the survey, which will start around end of July. You will earn additional money when you complete the 2nd part of the survey.

[font: 1 size smaller] All data collected from the survey will be for academic research only. We abide by academic regulations in Hong Kong, United States, and the European Union to protect the rights and privacy of all study participants. Identifiable information will only be used to contact you as a study participant and to process study payment. The identifiable information will be de-linked from the data and stored separately, in encrypted format. We will never share the data we collected with any government bodies, organizations, or the school administration. You can click **here** *[insert FAQ link: stanford.edu/~dyang1/pdfs/HKUST_Study_FAQ.pdf]* to learn about additional details of the study.

感謝您參與這次跟進調查。調查將花費約 10 分鐘完成。你的持續參與對於研究成果意義重大。

完成本調查後，您將獲得 **100 港元**作為報酬。第二部份的問卷調查將會在七月下旬開始。你完成第二部份調查後，將會獲得另外的報酬。

[font: 1 size smaller] 所有經由問卷調查收集的數據只會用於學術研究用途。我們嚴守香港、美國和歐盟的學術規定，保障所有研究參與者的權利和私隱。可用於追踪身份的個人資訊只會用於與你就研究參與的事宜聯絡，以及安排支付研究報酬。個人資訊會與其他數據分離並加密儲存，我們亦不會把收集到的數據分享給任何政府機關、團體或校方的管理人員。你可在此 *[insert FAQ link: stanford.edu/~dyang1/pdfs/HKUST_Study_FAQ.pdf]* 了解更多有關本研究的資訊。

[Section: information about protests]

1. How many people in total do you think *participated* in the July 1st March（七一大遊行）in *2017*?

   {Open-ended question; fill in integer > 0}

2. Are you planning to participate in the July 1st March（七一大遊行）in 2018?
   1 = Yes
   2 = Not sure yet, but more likely than not
   3 = Not sure yet, but more unlikely than yes
   4 = No

3. On July 14th, Hong Kong's High Court ruled that 4 directly-elected members of the Legislative Council are disqualified of their seats. Who are these 4 disqualified LegCo members?
   [pick 4 out of 5]

   LEUNG Kwok-hung 梁國雄
   Nathan LAW Kwun-chung 羅冠聰
   Eddie CHU Hoi Dick 朱凱迪
   LAU Siu-lai 劉小麗
   Edward YIU Chung-yim 姚松炎

[Section: political beliefs and attitudes]

4. By 2025, which of the following outcome regarding Hong Kong's *political* institutions（政治體制）do you think is the *most* likely?
   1. Completely integrated with the political institutions of Mainland China
   2. Not fully integrated with the political institutions of Mainland China, but closer to that of Mainland China than to full democracy
   3. Not fully integrated with the political institutions of Mainland China, but closer to full democracy than to the institutions of Mainland China

4. Hong Kong has separate and completely different political institution from those of Mainland China

5. For the *most likely* outcome that you picked in previous question (2025 outcome), how certain do you think it will actually happen?
   0 = completely uncertain
   5 = somewhat certain
   10 = completely certain

6. By 2050, which of the following outcomes regarding Hong Kong's *political* institutions (政治體制) do you think is the *most* likely?
   1. Completely integrated with the political institutions of Mainland China
   2. Not fully integrated with the political institutions of Mainland China, but closer to that of Mainland China than to full democracy
   3. Not fully integrated with the political institutions of Mainland China, but closer to full democracy than to the institutions of Mainland China
   4. Hong Kong has separate and completely different political institutions from those of Mainland China

7. For the *most likely* outcome that you picked in previous question (2050 outcome), how certain are you that it will actually happen?
   0 = completely uncertain
   5 = somewhat certain
   10 = completely certain

8. How important is it for you to live in a country that is governed *democratically*, even if democracy makes no significant difference in the socioeconomic status of you, your family, or the country as a whole?
   0 = not at all important
   5 = neutral
   10 = absolutely important

9. Where do you stand in terms of your political attitudes? (支持的政治立場)
   0 = pro-democracy (支持民主派)
   5 = neutral (中立)
   10 = pro-establishment / pro-Beijing (支持建制派)

10. As it is now, is the Chinese Communist Party legitimate in ruling over Hong Kong?
   0 = not at all legitimate
   5 = in between
   10 = completely legitimate

11. To what extent do you think Hong Kong should be an independent nation?
   0 = HK should not be independent at all
   5 = in between
   10 = HK should definitely be independent

[Section: beliefs regarding others]

12. Some people in Hong Kong are in strong support of its independence (香港獨立). To what extent do you think that these people who hold such beliefs are afraid of (害怕) expressing their beliefs in public?
   0 = not at all afraid
   5 = somewhat afraid
   10 = extremely afraid

13. How important is it for you to live in a country that is governed *democratically*, even if democracy makes no significant difference in the socioeconomic status of you, your family, or the country as a whole?
   0 = not at all important
   5 = neutral
   11 absolutely important

11 absolutely important

What is the average answer that *all citizens of Hong Kong* would have chosen?
[Fill in a number, from 0-10]

14. As it is now, is the Chinese Communist Party legitimate in ruling over Hong Kong?
    0 = not at all legitimate
    5 = in between
    10 = completely legitimate

    What is the average answer that *all citizens of Hong Kong* would have chosen?
    [Fill in a number, from 0-10]

15. To what extent do you think Hong Kong should be an independent nation?
    0 = HK should not be independent at all
    5 = in between
    10 = HK should definitely be independent

    What is the average answer that *all citizens of Hong Kong* would have chosen?
    [Fill in a number, from 0-10]

[Section: donation]

Thank you for participating in our study this year.
As promised, you will receive **HKD 100** for completing this part of the survey. You will also be able to earn additional compensation when you completed the 2nd part of the survey which will start in about 3 weeks.

We would like to give you the choice of receiving the HKD 100 participation fee directly, or making a contribution to one of the following organizations.

Your participation payment belongs to you, and you should feel absolutely free to receive all of it as a direct payment to you, or to contribute any amount of your payment to the organization you prefer.

We will transfer the amount you indicated to the corresponding organization on your behalf. We will provide you with a receipt from the contribution; your contribution decision will be completely private and anonymous.

Please note this research project is *not* affiliated with any of the following organizations.

感謝你參與我們今年的研究。

按照約定，你將收到 100 港元作為完成本問卷調查的報酬。在你完成三星期後開始的第二部份問卷調查後，你亦會收到另外的報酬。

我們想讓你選擇，直接收到 100 港元的報酬，或者将其中一部分捐獻給以下團體之一。

你的報酬是屬於你的，你可以完全自由地決定直接收取全部的報酬，或者捐獻任何數目的金額予你選擇的團體。

我們會代你把你選擇的金額轉帳予你選擇的團體。我們將向你提供收據，而你的捐款決定將維持保密及暱名。

請注意，本研究計劃與所有下列的團體沒有聯繫。

16. Do you want to make a contribution to any of the following organizations from part or all the participation fee (HKD 100) that you have earned from today's survey?
*Note that your donation decision will **not** affect the participation fee that you will be receiving from participating in future part(s) of the study. You will receive those amounts in entirety.*

    1 = Demosistō 香港眾志 (https://www.demosisto.hk)
    2 = DAB 民建聯 (http://www.dab.org.hk)
    3 = None

17. *[Display if previous question's answer is 1 or 2]*
How much of the HKD 100 participation fee do you want to contribute to the group that you chose above?
Please fill in number between 0-100.
{fill in blank, integer 0-100}

[Section: conclusion]

Thank you for participating in today's survey.
We will email you around late July about the 2nd part of the survey.

The study payment will be ***deposited directly to your bank account*** via the ***HKUST Student Information System (SIS)***, as soon as the study concludes (by end of July). The payment process normally takes about four to eight weeks. There might be some delays in SIS payment processing due to summer vacation.

If you wish to receive the payment sooner, you may choose to receive the payment by bank cheque below. You will need provide us with your mailing address and payee name in order to receive the cheque. We will issue a bank cheque to process your payment approximately two weeks after the study concludes.
Please make sure to click ">>" in order for us to record your answer.

[question: "I would like to receive my payment by:
a = HKUST Student Information System (SIS)
b = bank cheque (need to provide mailing address and cheque payee info)]

If (b) is chosen, then shown 2 more questions.
1. *Mailing address [large text box]*
2. *Payee Name (must be identical to bank record)*

If you have indicated that you want to make contribution to an organization, we will transfer the amount you indicated on your behalf in approximately 2 weeks, and we will email you a receipt from the contribution.

Thank you again for your support of this study. Feel free to contact us at jzproject@ust.hk if you have questions and/or concerns regarding this study.

感謝你完成今天的問卷。我們將在七月下旬以電郵通邀請你完成第二部份的問卷。

研究的報酬將在研究結束後（七月底）經由香港科技大學的學生資訊系統(SIS)直接存入你的銀行戶口。一般而言，經由 SIS 支付的程序須時約四至八星期，但程序有可能因為暑假而有所延誤。

如果你希望更快收到報酬，你可以選擇收取銀行支票。你需要向我們提供你的郵寄地址和收款人姓名以收取支票。我們將在研究結束後約兩星期內備妥並寄出研究報酬的支票。請在填寫資料後點擊“>>”按鈕，以確保我們能紀錄你的回覆。

[問題：我希望用以下方式收取報酬
a = 香港科技大學學生資訊系統(SIS)
b = 支票(你需要提供郵寄地址及收款人資訊)
]

如選取了(b)，顯示兩條額外問題。

1. 郵寄地址
2. 收款人姓名（須與銀行戶口相同）

如果你已表示你希望把報酬捐獻給團體，我們將在約兩星期內替你把你指定的金額轉交該團體，然後經電郵把收據傳送給你。

再次感謝你支持我們的研究。如有任何疑問或顧慮，請以電郵與我們聯絡：
jzproject@ust.hk

D.6 Post July 1st 2018 protest module *(June 2018)*

[Section: welcome]

[add survey logo here]

Thank you for participating in this follow-up survey, which will take about 5 minutes to complete. You will earn HKD 100 once you have completed today's survey.

Your continuous participation in this year's survey is extremely important to validity of our academic research.

You will have opportunity to participate in additional components of the study, which will take about 40 minutes. You will earn additional payment if you complete the additional components of the study. We will tell you more details at the end of today's survey.

Feel free to contact us at jzproject@ust.hk if you have questions and/or concerns regarding participating in this study.

感謝您參與這次跟進調查。調查約須 5 分鐘完成。完成本部份的問卷調查後，你將獲得 100 港元作為報酬。你持續參與今年的問卷調查，對研究成果的有效性意義重大。

你亦會得到參與研究額外部分的機會，該部份將花費約 40 分鐘。你將在完成本問卷後獲得更多有關資訊。

如你對參與研究有任何問題或顧慮，歡迎透過電郵 jzproject@ust.hk 與我們聯絡。

All data collected from the survey will be for academic research only. We abide by academic regulations in Hong Kong, United States, and the European Union to protect the rights and privacy of all study participants. Identifiable information will only be used to contact you as a study participant and to process study payment. The identifiable information will be de-linked from the data and stored separately, in encrypted format. We will never share the data we collected with any government bodies, organizations, or the school administration. You can click here *[insert FAQ link: stanford.edu/~dyang1/pdfs/HKUST_Study_FAQ.pdf]* to learn about additional details of the study.

所有經由問卷調查收集的數據只會用於學術研究用途。我們嚴守香港、美國和歐盟的學術規定，保障所有研究參與者的權利和私隱。可用於追踪身份的個人資訊只會用於與你就研

究參與的事宜聯絡，以及安排支付研究報酬。個人資訊會與其他數據分離並加密儲存，我們亦不會把收集到的數據分享給任何政府機關、團體或校方的管理人員。你可在此 *[insert FAQ link: stanford.edu/~dyang1/pdfs/HKUST_Study_FAQ.pdf]* 了解更多有關本研究的資訊。

[Section: protest participation]

1. Have you participated in the July 1st March in 2018?
   [yes / no]
   你有沒有參與 2018 年的七一遊行？
   [有／沒有]

2. Since last year's July 1st march, have you formed stronger friendships with people who are politically engaged?
   [yes / no]
   自去年的七一遊行後，你有沒有與投入政治參與的人士結交為好友？
   [有／沒有]

3. [If #1 (participated in 2018 = yes)]
   Did you participate in this year's July 1st March with any of these closer friends?
   [yes / no]
   你今年有沒有與這些好友一起參與七一遊行？
   [有／沒有]

[Section: conclusion, and introduction to panel module]

Thank you for participating in today's survey. You have earned HKD 100 additional payment.

We now invite you to participate in a follow-up survey that will take about 40 minutes to complete. You will earn an additional HKD 250 if you complete this part, as well as bonus payment up to HKD 200 depending on your answers. You can start the survey right now, or you can complete it

at a later time at your convenience. Your participation in this part of the survey is extremely important to validity of our academic research.

Please click the following link to start the additional follow-up survey: *[insert study link]*

We will process your study payment as soon as the study completes, using the method you prefer. We will email you soon about the total payment you earn from this year's study, and details on the payment process. If you have chosen to receive the payment via SIS, please confirm the bank account information that you registered at the SIS. Please click **here** *[insert pdf link for SIS bank account info: stanford.edu/~dyang1/pdfs/SIS_Bank_Information_Instruction.pdf]* for more details.

Thank you again for your support of this study. Feel free to contact us at jzproject@ust.hk if you have questions and/or concerns regarding this study.

感謝你參與今次的問卷調查。你將收到 100 元額外報酬。

我們現在邀請你參與一項約 40 分鐘的跟進調查。完成問卷後，你將得到 250 元的額外報酬，加上視乎你的回答獲取的多至 200 元的額外獎賞。你可以立即開始跟進調查，或留待你方便的時候再開始。你持續參與今年的問卷調查，對研究成果的有效性意義重大。

請點擊以下連結，以開始跟進調查：
[insert study link]

我們會在整個調查結束後，按你的選擇處理報酬。你將在近期收到有關你的報酬總額和付款細節的電郵。如果你选择通过經由 SIS 支付，请确认在 SIS 註冊的銀行信息準確。具體方法請見**這裡***[insert pdf link for SIS bank account info: stanford.edu/~dyang1/pdfs/SIS_Bank_Information_Instruction.pdf]*。

再次感謝你參與本研究。如有任何問題或顧慮，歡迎透過電郵 jzproject@ust.hk 與我們聯絡。

D.7 Protest participation treatment *(June 2017)*

As researchers, we have continually been struck by how widely-varying are reports on the size of each July 1 March, depending on the information source. For example, on July 2, 2014, the BBC reported that organizers estimated attendance of 510,000 people, while police estimated 98,000 people.

We would like to do better using the wisdom of crowds: as researchers, we can provide a scientific and politically-neutral estimate.

Because many students attend the events of July 1, we are asking a subset of survey participants to help us get a better estimate of the July 1 March attendance.

The idea we have is to collect information from individuals on the number of people around them at different places, at different times of day during the March.

作為研究者，我們一直對於每年七一遊行，不同訊息來源公佈的參與人數之間的龐大差異很感興趣。例如，2014 年 7 月 2 日，BBC 報導民陣估計遊行參與人數為 51 萬人，而警方的估計數字則為 9 萬 8 千人。

我們希望可以利用群眾智慧作出更好的估算：作為研究員，我們可以作出科學而不受政治立場影響的估算。

因為有很多同學出席七一遊行，我們現在邀請部分參加者幫助我們估算一個更準確的七一遊行的參與人數。

我們的想法是收集不同的人在遊行當日不同地點、不同時間身邊的人數。

========== Page break ==========

We would like to ask you to participate in this scientific endeavor. This should take only **5 minutes** of your time *while you are at the March*.

If you attend the March, we would ask you to:

a. At two points in time during the March (ideally one hour apart or more), please make a note of approximately how many people you would touch if you reached your arms straight out to the side and spun in

a circle. Please also note the location (nearest intersection) and time.

b. At the two times when you count the people around you, please take a photo showing the area around you.

Before July 1st, we will email you a survey link at which to upload your counts and photos.

We assure you that the information you send us will be used only for scientific purposes. We will use data from the photo that you send us (for example, counting individuals), but then we will permanently delete the photo.

Once you have uploaded all the information, we will pay you HK$350 for your time and effort.

Feel free to contact us at jzproject@ust.hk if you have questions.

我們希望邀請你參加這一個科學的任務。在你*參與遊行期間*，這只會花費你大約 **5 分鐘**的時間。

假如你將參與遊行，我們希望請你：

a. 在遊行期間兩個不同的時間點（最好相隔一小時或以上），請記下假如你把雙手向外伸直並旋轉一圈的話，大約會觸碰到多少人。並請記下你的位置（最接近的街口）和時間。
b. 在你兩次估算身邊人數的時候，請拍攝一張你所在地附近的相片。

在 7 月 1 日之前，我們將透過電郵給你調查的連結，用來上傳你的點算數字和相片。

我們向你保證，你傳送給我們的資訊只會用作科學用途。我們將會使用你上傳給我們的相片（例如，計算人數），但我們將永久刪除相片。

當你上載所有的資訊後，我們會向你支付 350 港元作為你花費的時間和精力的報酬。

如果你有任何問題，請透過 jzproject@ust.hk 向我們聯絡。

D.8 Protest participation reporting module *(July 2017)*

[Screen 1: welcome]

{insert survey logo}

Thank you for participating in our crowdsourcing effort to estimate the total number of people who went to this year's July 1st March.

You can upload your counts and the photos you took here.

[Screen 2]

Observation note #1

1. What time was this observation made?
   July 1st 2017, hour ___ (AM/PM), minute ___

2. Where was this observation made?
   Nearest street intersection: (e.g. xxxx)

3. Approximately how many people you would touch if you reached your arms straight out to the side and spun in a circle?
   {fill in blank for number: integer >= 0}

4. Please upload the photo you took during this observation moment. Please do *not* compress photo, but upload the original full-sized file.

[Screen 3]

Observation note #2

5. What time was this observation made?
   July 1st 2017, hour ___ (AM/PM), minute ___

6. Where was this observation made?
   Nearest street intersection: (e.g. xxxx)

7. Approximately how many people you would touch if you reached your arms straight out to the side and spun in a circle?
   {fill in blank for number: integer >= 0}

8. Please upload the photo you took during this observation moment. Please do *not* compress photo, but upload the original full-sized file.

[Screen 4]

Thank you very much for your participation.

We assure you that the information you provide us will be used only for scientific purposes. We will use data from the photo that you upload to count individuals present at the event, but then we will permanently delete the photo once we process the photo.

We will add **HKD 350** on top of the total amount that you have earned through completing the online surveys in June.

Once we have concluded this round of the study and calculated all the bonus payment, we will email you to notify you the total amount you have earned and payment details. We will process your participation and bonus payment through the HKUST Student Information System (SIS).

Feel free to contact us at jzproject@ust.hk if you have questions.

D.9 Subway placebo treatment *(June 2017)*

There have been many arguments that the MTR in Hong Kong is exceeding its operating capacity, primarily due to the large number of tourists visiting Hong Kong.

As researchers, we would like to use the wisdom of crowds to provide a scientific and politically-neutral estimate of the number of people at some hub MTR stations during the peak hours.

Because many students go to MTR stations in downtown Hong Kong, we are asking a subset of survey participants to help us get a better estimate of the size of crowds at these stations.

The idea we have is to collect information from individuals on the number of people around them at different MTR stations, at different times of day during the weekend of July 8th and 9th.

很多評論認為香港的地下鐵路系統已經超出了營運能力上限，主要的原因是大量旅客訪港。

作為研究者，我們希望可以利用群眾智慧，科學而不受政治立場影響地估算一些主要港鐵站在繁忙時間的人數。

因為有很多同學會去香港市區的港鐵站，我們現在邀請部分參加者幫助我們估算一個更準確的港鐵站人數。

我們的想法是在 7 月 8 日和 7 月 9 日收集不同的人在不同的港鐵站、不同時間身邊的人數。

========== Page break ==========

We would like to ask you to participate in this scientific endeavor. This should take only **5 minutes** of your time *while you are at a downtown MTR station*.

You can go to **any** of the following stations listed:

- Central, Admiralty, Wan Chai, Causeway Bay, Tsim Sha Tsui, Mong Kok

When you are at an MTR station, we would ask you to:

a. At two points in time - at least two hours apart - please make a note of approximately how many people you would touch if you reached your arms straight out to the side and spun in a circle. Please also note the station name, location within the station, and time.
b. At the times when you count the people around you, please take a photo showing the area around you.

Before the weekend of July 8th, we will email you a survey link at which to upload your counts and photos.

We assure you that the information you send us will be used only for scientific purposes. We will use data from the photo that you send us (for example, counting individuals), but then we will permanently delete the photo.

Once you have uploaded all the information, we will pay you HK$350 for your time and effort.

Feel free to contact us at jzproject@ust.hk if you have questions.

我們希望邀請你參加這一個科學的任務。在你*身處港鐵站時*，這將只花費你大約 **5 分鐘**的時間。

你可以去以下**任何**一個港鐵站：

- 中環，金鐘，灣仔，銅鑼灣，尖沙咀，旺角

當你身處港鐵站時，我們希望請你：

a. 在兩個不同的時間點——至少相隔兩小時——請記下假如你把雙手向外伸直並旋轉一圈的話，大約會觸碰到多少人。並請記下站名、你在站內的位置和時間。
b. 在你兩次估算身邊人數的時候，請拍攝一張你所在地附近的相片。

在 7 月 8 日之前，我們將透過電郵給你調查的連結，用來上傳你的點算數字和相片。

我們向你保證，你傳送給我們的資訊只會用作科學用途。我們將會使用你上傳給我們的相片（例如，計算人數），但我們將永久刪除相片。

當你上載所有的資訊後，我們會向你支付 350 港元作為你花費的時間和精力的報酬。

如果你有任何問題，請透過 jzproject@ust.hk 向我們聯絡。

D.10 Subway participation reporting module *(July 2017)*

[Screen 1: welcome]

{insert survey logo}

Thank you for participating in our crowdsourcing effort to estimate the number of people at some important MTR stations in Hong Kong on weekends.

You can upload your counts and the photos you took here.

[Screen 2]

Observation note #1

1. What time was this observation made?
   July ___ 2017, hour ___ (AM/PM), minute ___

2. At which MTR station was this observation made?
   [drop-down menu]
   Central, Admiralty, Wan Chai, Causeway Bay, Tsim Sha Tsui, Mong Kok

3. Where was this observation made in the station?
   [open-ended question]

4. Approximately how many people you would touch if you reached your arms straight out to the side and spun in a circle?
   [fill in blank for number: integer >= 0]

5. Please upload the photo you took during this observation moment. Please do *not* compress photo, but upload the original full-sized file.

[Screen 3]

1. What time was this observation made?
   July ___ 2017, hour ___ (AM/PM), minute ___

2. At which MTR station was this observation made?
   [drop-down menu]

Central, Admiralty, Wan Chai, Causeway Bay, Tsim Sha Tsui, Mong Kok

3. Where was this observation made in the station?
   [open-ended question]

4. Approximately how many people you would touch if you reached your arms straight out to the side and spun in a circle?
   [fill in blank for number: integer >= 0]

5. Please upload the photo you took during this observation moment. Please do *not* compress photo, but upload the original full-sized file.

[Screen 4]

Thank you very much for your participation.

We assure you that the information you provide us will be used only for scientific purposes. We will use data from the photo that you upload to count individuals present at the event, but then we will permanently delete the photo once we process the photo.

We will add **HKD 350** on top of the total amount that you have earned through completing the online surveys in June.

Once we have concluded this round of the study and calculated all the bonus payment, we will email you to notify you the total amount you have earned and payment details. We will process your participation and bonus payment through the HKUST Student Information System (SIS).

Feel free to contact us at jzproject@ust.hk if you have questions.

Appendix E July 1st, 2017 crowd size estimates

We describe the procedure and results of estimating the crowd size of July 1st, 2017, march based on the information collected by the study participants.

There are many estimates on the number of participants in the demonstration, with wide discrepancies between them. The estimation provided by the Hong Kong University Public Opinion Programme (HKUPOP) was based on the counting of the demonstrators at a fixed point throughout the entire demonstration. Their conclusion is that the total number of demonstrators is somewhere between 26 and 32 thousands. Our crowd-sourcing effort seeks to make an estimation based on another method, in order to provide a plausible range of the number of participants, which can be used to examine which of the earlier estimates were reasonable.

Data available The effective data available consists of 56 responses from the study respondents, including two headcounts taken separately for each respondent. These two headcounts were the number of people that one can touch when stretching out his or her both arms. For each respondent, these two counts were taken at different places at different times, with both the location and time recorded. The drawbacks to the dataset were the small sample size, the very limited information contained in the reported headcount, the dispersal of time and location at which the counts were reported, and the quite common ambiguity of the location (for example, only reporting the main avenue on which the counts were recorded, rather than the specific intersection).

Methodology We assume that the crowd participating in the demonstration had occupied a substantial part of the pre-determined demonstration route. This method is plausible because the 2017 demonstration was one that the endpoint of the march was reached after all demonstrators had left the starting point; therefore, at some point, all demonstrators were on the route, occupying some segments of it. We pin down these segments of the demonstration route by keeping only the counts recorded within the time frame of 15:00 and 18:00, when the main demonstration march took place, and locate both ends of the route where counts were given in this time-frame. This leaves us with 92 counts at different places in this three-hour window.

Furthermore, we assume that within each segment of the demonstration route, the density of the crowd is relatively stable. Therefore, we take the average of the counts from all available responses for every segment of the route and use it to calculate the average density on every segment of the route. For the sake of simplicity and accuracy, we only consider the larger and longer roads on which the demonstration proceeded, because the smaller roads were too short to affect the estimation significantly and lacked responses. Therefore, we estimate the average density of the crowd on the Victoria Park, Causeway Road, Hennessy Road, Queensway, and Yee Wo Street. Also in calculating the density, we assume that the arms-length of respondents are 1.70 meters, which roughly corresponds to the average height of Hong Kong teenagers.

Finally, with the average density available, and data on the lengths and widths of these five aforementioned segments of the demonstration route available, we make the estimation by multiplying each segment's area and the density of demonstrators on it, and then summing them together.

Results Appendix Table E.1 includes all the crowd densities that have been estimated from the survey responses within the time-frame of 15:00 to 18:00. The density listed is the number of people within the one squared-meter circle around our respondent. Note that our respondent himself

or herself is also included, so that the density is calculated by:

$$density = (N + 1) \div (1.7^2 \times \pi)$$

where N denotes the number of people within arms reach by each respondent.

Table E.1: Estimated crowd densities

Hennessy	Queensway	Victoria Park	Causeway	Great George	Yee Wo
0.957	0.705	0.964	1.010	1.120	0.936

Appendix Table E.2 shows the measurements of all the road or street segments on the demonstration route; note that not all of them will be used. This is compiled based on official data and the map of the demonstration route provided.

Table E.2: Route area information

Chinese Name	English Name	Width	Length	Area
維多利亞公園中央草坪	Victoria Park Central Lawn	158	80	12,640
維多利亞公園路徑	Victoria Park Route	4.100	265.895	1,090.169
高士威道	Causeway Road	9.600	475.929	4,568.915
禮頓道	Leighton Road	8.700	20.896	181.798
伊榮街	Irving Street	11.400	158.428	1,806.082
邊寧頓街	Pennington Street	11.800	61.446	725.060
怡和街	Yee Wo Street	7.600	167.028	1,269.415
軒尼詩道	Hennessy Road	10	1,837.731	18,377.310
金鐘道	Queensway	10	179.657	1,796.570
樂禮街	Rodney Street	5.700	149.370	851.409
夏道	Harcourt Road	10.600	300.426	3,184.519
夏道行人道	Harcourt Road Pavement	12.400	255.763	3,171.465
添美道行人路	Tim Mei Avenue Pavement	3	137.940	413.819

Finally, we determine what proportion of the Victoria Park Lawn was occupied. It is obvious that not the entire park was filled by demonstrators when the leading elements had reached far down the route, but many of the responses on Victoria Park still came in very late in our time-frame. Therefore, we provide five final estimates, each assuming a different proportion of the Victoria Park being occupied, ranging from only occupying the Victoria Park Road to occupying the entire park. These final estimates shown in Appendix Table E.3.

Table E.3: Estimation of number of participants

Full Lawn	75% lawn	50% lawn	25% lawn	Park route only
37,069.76	34,024.34	30,978.92	27,933.49	25,938.71

These estimates give a range slighter higher than that given by HKUPOP, and certainly much higher than the numbers provided by the Hong Kong Police. We think that our estimation could slightly overestimate the crowd size, for the following reasons. First, it is most likely that our respondents were always at the densest parts among the demonstrators, because they randomly followed the crowd. So most likely, their estimation of the crowd density is higher than the actual density over the entire road. Second, our method is based on the assumption that in this three hour interval, the entire length of the segments of the route taken into consideration was occupied. However, these over-estimations should be partially offset by the exclusion of many smaller road segments from our analysis. Yet these smaller segments were indeed not too significant in causing the downward bias, given their short lengths and small widths. Finally, given the reports on this demonstration, the proportion of the Victoria Park lawn occupied should probably be quite low. Therefore, we think the range given from ”Park route only” to ”50%” could be more accurate. If this restriction is considered, then this estimation is very close to that of the HKUPOP.