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The Revolt of a Young Middle Class?

A multi-variate analysis on the 2019 District Council Elections in
Hong Kong

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ABSTRACT

The modernization theory proposes that democratization of political systems is positively correlated with economic development. One link between the two processes is the rise of an urban middle class. Hong Kong's anti-extradition bill movement in 2019 became the largest democratic movement the city has yet seen. Under the modernization theory, Hong Kong's transition seems no special case from other late developing countries. This analysis aims to answer the research question: Did the middle class play a significant role in the democratic movement in Hong Kong? The 2019 District Council (DC) elections, the first elections since the movement began in June, saw the highest turnout in Hong Kong's political history and provided primary data to understand the factors behind democratic demands. Using a multivariate analysis on constituency and candidate level data, I argue that there is evidence of a young middle class revolt which help account for the democratic movement's persistence. This phenomenon is observed in the consistently positive vote effect of new young voters and the curvilinear relationship between income and pro-democracy vote share. Protesters' determination to engage in a non-cooperation movement and the inability of the current system to redistribute resources, this analysis argues, makes economic solutions unpractical in the near future.

Keywords: democracy, economic development, middle class, protest vote

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And at last, I can do nothing if God does not will. I sing of His glory in times of distress and joy. A verse from the Gospels has accompanied me in my last month of dissertation work:

"Nevertheless, do not rejoice in this, that the spirits are subject to you, but rejoice that your names are written in heaven." (Luke 10:20)

Full name	Abbreviation
District Council	DC
Legislative Council	LegCo
National Security Law	NSL

I. INTRODUCTION

"No bourgeois, no democracy," the American sociologist Barrington Moore asserted in 1966. Moore's assertion is part of the modernization theory, which predicts that economic transformations will lead to democratic systems. Lipset(1959), for instance, argues that four economic indices - wealth, industrialization, urbanization and education - provide the basic conditions for democratic systems. Hong Kong has all the basic conditions prescribed by the modernization theory for democratisation, so the recent democratic movement should come at no surprise - but the question is: When does it only happen now? A wealth of studies has been done on the role of the middle class in Western and Eastern European societies' transition to democracy. Few studies have explored, however, why democratic movements gather traction in some but not other late-developing countries. This analysis aims to fill the gap by understanding the forces of democratic movement in late-developing societies. Specifically, it aims to answer: Does the middle class play a significant role in Hong Kong's sustained democratic movement?

The answer to this question is not immediately obvious. In a poll conducted by the Chinese University of Hong Kong (2020), around 80% and 60% of interviewees aged 18-29 and 30-39 correspondingly claim that they have participated in all anti-extradition bill demonstrations. Among the 8,941 protesters arrested between June 9, 2019 and May 29, 2020, 1,707 were under 18 years old, while another 5,640 were aged 18 and 30 years old (Arranz 2020). It is clear that the most active dissidents are young people, but it is not clear whether they belong to the middle class or are youths disgruntled by a lack of social mobility. The economic resources pooled by the protest movement, however, suggest that these young protesters might have been gainfully employed or well-endowed. In the first three months of the movement, Hong Kong's crowdfunding campaigns have raised 15 million USD (N. Liu, S.-L. Wong, and Woodhouse 2019). Freedom Hong Kong's crowdfunding campaign, for instance, raised 1 million USD in two hours in August 2019. Young professionals such as lawyers, doctors and surveyors have marched (Choi 2019), petitioned on newspapers (李 2019) and formed skill-based groups (潘 2019) as a moderate camp of the movement. This analysis hypothesizes that the middle class played a significant role in the sustainability of the movement. The 2019 DC elections provided an empirical basis to test this hypothesis by asking: Did the young middle class vent their discontent at the ballot box in the 2019 DC elections?

Using constituency-level and candidate-level data in the 2019 DC elections, I find that a higher proportion of newly-registered 18-40 voters is associated with a higher pro-democracy vote share in middle-class constituencies. Income also has a curvilinear relationship with pro-democracy vote share, indicating the support for the pro-democracy camp is the strongest in middle-income constituencies. Although newly-registered 41-60 voters have a consistently negative effect on pro-democracy vote share, the vote effect of total 41-60 voters is not conclusive, implying there might be a divide within the middle-aged voter population. Since the DC elections uses a "first-past-the-post" system, a margin as small as 10 votes is

enough to draw the line between victory and defeat. These newly registered young voters thus have a decisive effect on pro-democracy candidates' landslide victory in the DC 2019 elections.

The primary method of the analysis is a multiple regression model (OLS) at the constituency level. Since individual data is not available, the results must be interpreted carefully. The coefficient estimates do not represent the attitudes of individual voters more than the aggregate effect of demographic characteristics at constituency level. Still, the robustness of both the positive vote effect of new 18-40 voters and the curvilinear relationship between income and pro-democracy vote share provide reasonable grounds to believe that the young middle-class voters have been a powerful force behind the democratic movement in Hong Kong.

The study's policy significance is not only for Hong Kong but also other late-developing territories. Hong Kong's democratic movement rocked the city, rupturing community ties and creating significant business losses. Although the implementation of the National Security Law and the rise in coronavirus cases have reduced protest activities since June 2020, much uncertainty remains on whether the discontent will snowball into an avalanche waiting for the next trigger. By identifying a driving force behind the democratic movement, this study provides a basis for policies to target and address one major source of grievances. Protesters' determined refusal to cooperate with the government and their belief in the current system's inability to redistribute resources, I argue, make economic solutions unpractical in the near future. Other non-democratic late-developing countries could face the same challenge and will eventually reconcile the incompatibility between redistribution and an oligarchic political system.

The following content is divided into five parts. First, a literature review on the relationship between the middle class and democracy, as well as past research on the democratic movement in Hong Kong. Second, a background review on Hong Kong's democratic movement to provide context for the reader to understand the current analysis. Third, the description of the data and methodology used to investigate the impact of young middle-class voters in the 2019 DC elections. Fourth, presentation and discussion of findings, as well as policy implications. The last section concludes.

II. LITERATURE REVIEW

This section discusses the past literature on the relationship between the middle class and democracy, as well as research on Hong Kong young protesters' grievances.

1. THE MIDDLE CLASS AND DEMOCRACY

While the idea that an educated middle class provides a foundation for democracy can be traced back to Aristotle, postwar research on the political ramifications of economic development formed the contemporary discourse on the topic. American scholars writing on these in the 1960s, 'the development decade', have deeply influenced the U.S. foreign policy in less developed countries (McVety 2012).

Lipset(1959) argues that the presence of wealth, industrialization, urbanization and education, which can be subsumed as under the umbrella term of economic development, provide the basic conditions to sustain democracy. However, he warns that the causal relationship is probabilistic and can be affected by uniquely historical factors. As a country increases in wealth, the political role of the middle class changes as the shape of stratification changes "from an elongated pyramid, with a large lower-class base, to a diamond with a growing middle-class" (p. 83, Lipset 1959). A large middle class can facilitate democracy by rewarding moderate and democratic parties and penalize extremist groups.

Published one year after Lipset's paper, Rostow(Rostow 1960) posits a different direction in the relationship between economic and political development. His seminal work on the five stages of development (traditional society, pre-conditions for take-off, the take-off, the drive to maturity and the age of high mass consumption) argues that economic development will be stalled without political freedom. The lack of a "free-wheeling commercial middle class" (p.98) was one reason why Russia took much longer to complete the take-off stage. The lack of political freedom after the take-off in Russia had also limited the rise of consumption. Instead, the Russian state's decision to invest heavily in military-related heavy industries prevents the country from entering the high-consumption stage and launching into rapid growth.

The 60s modernization theorists generally agree with an unilinear view which proposes that in the transition to modernity, the increase in consumer goods will inevitably lead to a more equal distribution of power. This is famously epitomized in Fukuyama's *The End of History and the Last Man* (1992), which sees capitalist democracy as the ultimate stage of modernity.

Nevertheless, the cases of democratization in the developing world have motivated Western scholars to revisit the unilinear view (Di Palma 1990, Diamond 1999, O'Donnell, Cardoso, and Scholars 1991). Asian scholars have also questioned the deterministic progression from wealth to democracy as democratization is not observed across the board among Asian societies despite striking economic progress (early work see Friedman 1994, Rodan 1996, Morley 1999). Hattori and Funtasu (Hattori and Funatsu 2003) argue that unlike Western societies

which have developed endogenously with certain pre-conditions, Asian societies have often been under external pressure to modernize (Hattori and Funatsu 2003). They point out that even under the same external pressure, many Asian societies have not developed similarly. As a result, middle classes have distinct characteristics from one Asian society to another.

The difference in modernization processes between Asia and the rich West calls attention to whether the unilinear view is an appropriate framework to analyse Asia's middle classes and the region's democratization processes. For instance, the availability of mass production machinery has undermined the bargaining power of blue-collar workers more than their pre-industrial revolution counterparts in the West. The weak manifestation of conflict between blue-collar workers and white-collar middle classes had resulted in a weak class consciousness for either group (Hattori and Funatsu 2003). More importantly, the active role that Asian governments played in creating employment opportunities has created a middle class who is largely reliant on the state (Fernandes 2006, J. Chen 2013). These new middle classes, who have been the prime beneficiaries of Asia's strong state version capitalism (as opposed to the weak state version of capitalism in the West), then become the carriers of the Asian cultures of paternalism and communitarianism (Jones and Brown 1994). Although middle classes have sometimes played an influential role in promoting democratization (the case of Thailand in 1973, the Philippines in 1986, Korea in 1987, Taiwan in late 1980s), those same middle classes have also given way to military domination in the early years of development (Thailand in 1976 and 1977; the Philippines in 1980s). In reality, middle classes in many Asian societies (e.g. Malaysia, Singapore, China, Myanmar, Vietnam) are ambivalent to democracy (Morley and Crouch 1999).

Cognizant of the limitations of the unilinear view, scholars increasingly advocate for a contingent approach. Rueschemeyer, Stephens and Stephens (1992)'s class analysis argue that middle class could be hostile to democratization if it perceives its class interest is jeopardized by the demands of the working class. The success of democratic transition then hinges on whether the working class can find allies in other social groups to form a pro-democratic alliance that is too strong for the bourgeoisie to counter. Crouch and Morley (1999) provides a modernization sequence that fits better with the observation of Asian societies in the 21st century: economic growth drives social mobilization. Social mobilization drives political mobilization which can then drive regime change. They emphasize that regime change is not the same as democratization, since authoritarian regimes can create structures that respond to societal pressure. However, when the economy becomes too large and too complex to control, mere decentralization of economic decision-making process will not suffice. The educated modern classes (middle, business and working) will no longer accept being excluded from real political participation. Whether democratization occurs or authoritarian regime persists, however, depends on the power struggle between the state and the "people". Middle class's role in democratization can be ambiguous and depend on sociopolitical and socioeconomic conditions surrounding that class at a given time.

One thing both unilinear view and contingent view agree is the importance of the middle class's support in the democratization processes. I therefore hypothesize that the persistence of Hong Kong's democratic movement is because of the middle class's support. The middle class's support can be shown empirically if the pro-democracy vote share is higher in middle-income constituencies.

2. GRIEVANCES OF HONG KONG YOUTHS

The Umbrella Movement brought into limelight a generation of young protesters with vocal demands for democracy. News media, local scholars and even the government (Wu 2010, Chiu 2016) have labelled them the "post-80s" and "post-90s" generations and actively study their population characteristics to understand their frustration. The literature is dominated by two groups of explanations: cultural and economic.

The cultural explanations seek to explain Hong Kong youth's dissatisfaction by a generational difference in outlook and self-identification. The former attributes youth activism to their post-materialist outlook. Inglehart(1999) argues that post-materialism is the product of post-modernization, which can happen without the democratization predicted by modernization theory. Its emphasis on self-expression, he contends, diminishes deference for authority and increases support for democracy. In an earlier essay,

Since 2000, the annual growth of 0.5 - 0.8% in Hong Kong's per capita GDP has been uninterrupted by events such as the SARS epidemic and the 2008 financial crisis. By Inglehart's argument, the long-term prosperity should have strengthened post-materialist values. Indeed, post-materialist values are reflected Hong Kong's "left-wing localism" (Veg 2017, Kaeding 2017). In large-scale conservation campaigns such as Preserving Lee Tung Street in 2006, the Star Ferry and Queen's Pier Movement in 2006 and the Anti-Hong Kong Express Rail Link Movement in 2009, for instance, protesters oppose developmentalism on the grounds of collective memories, environmentalism and economic redistribution. The introduction of Liberal Studies in 2012 Diploma of Secondary Education (HKDSE) exams has been blamed as the wellspring of youth protests as it raises students' awareness of local and global affairs (Tsoi 2014). The extradition bill is likely to have been perceived as an encroachment on freedom by post-materialist Hong Kong youths who value autonomy, freedom and self-expression.

Another cultural explanation for Hong Kong youth's demand for democracy is the emergence of a Hong Kong identity. The Hong Kong identity can be traced back to the 1970s when Hong Kongers distinguished themselves from the mainland Chinese, who were often depicted as less civilized and less educated in 1970s and 80s pop culture (E. Ma 1996). Hong Kong youth's self-identification with the city, however, differs from the previous generations in that it identifies less with an ethnic and cultural pan-Chinese community and more with a civic society and grounded in a democratic community (2017). This brings the two cultural explanations in close relation, as a civic society can only exist when (post-materialistic) civil rights such as freedom of speech and political participation are also present.

Localists' appeal to people's anti-immigrant and anti-mainland sentiments might have reminded the reader of Western populist politics. Like populist voters in the developed West(Mudde 2004), localists complain about the competition of social resources of mainland immigrants or visitors (N. Ma 2015). Although a typical localist is unlike an average populist voter who is an old male working-class member, the narrative of "right-wing localists" (S. H.-W. Wong and Wan 2018) has given appeal to more materialistic explanations.

A large body of literature focuses on the effect of economic/ materialistic factors on voting behaviour. Positive evaluation of past economic performance and future expectations of economic prosperity increase voters' support for the incumbent (Fiorina 1981, Lockerbie 1991). Top leaders in Hong Kong and Beijing often quote the term "deep-seated problems" (深層次矛盾) which they see as to have led to the city's conflicts (a few recent examples see BBC 2019 and Caroline 2019). These problems are mainly soaring housing prices and

economic inequality (Xinhua 2019). The two are actually closely related as countries whose wealth is mainly immobile (real estate) are highly unequal (Boix 2003). With an overheated housing market and a severely high Gini index (Oxfam Hong Kong 2018), Hong Kong would appear especially vulnerable to outbursts of political violence.

Wong(2015)'s illustration of the redistribution consequences of a housing boom have made the materialist explanation particularly convincing. The fixed supply of land in a small city means that only businesses with high profits will be able to win the competition for land. Thanks to the influx of mainland tourists, the retail and personal care industries have expanded and are able to afford the high land rent. The expansion of the service sector increased demand for low-skilled workers. In contrast, fresh college graduates' wages have been stagnant. Unlike the low-skilled workers who qualify for public housing, young college graduates were too poor to afford the down payment of private housing and too rich to apply for public housing.

Hong Kong and Chinese top leaders often believe that public dissatisfaction will wane once these economic problems are solved. However, the government has been hindered by a legitimacy crisis (N. Ma 2011, J. Y.-s. Cheng 2014) to tackle socio-economic issues in the past few years. Young protesters do not believe these problems can be solved without a democratically elected government due to entrenched cronyism - Wong(2012) empirically shows that many firms listed on the Hong Kong Stock Exchange have directors or major shareholders serving in the Election Committee which votes for the Chief Executive. In addition, land supply and public policy are perceived to benefit the city's richest tycoons, whose bulk of wealth came from the real estate industry (J. Y.-s. Cheng 2014). This has sparked numerous protests against the "real estate hegemony" (S. H.-w. Wong 2015) since the late 2000s.

The two groups of explanations are not mutually exclusive. Rather, it shows that among the post-80s and post-90s who rally around a Hong Kong identity, young professionals are additionally affected by the soaring housing/ rental prices. They are likely to live with their parents in order to save rent or because of their inability to afford a flat. Their inability to leave the parental nest thus adds to their dissatisfaction. Since inter-generational economic transmission among high-earners is strong in Hong Kong (Peng, Yip, and Law 2019), I expect to find these young professionals living with their middle-class parents in middle-income constituencies.

Although the modernization theory emphasizes the role of the middle class in the democratization process, the housing market's effect on young professionals suggests that there is likely to be an age divide within the city's middle class. I therefore formulate three hypotheses:

H1: The presence of middle class in a constituency is unlikely to have a significant effect on pro-democracy vote share because of the age divide within the class.

H2: Pro-democracy vote share is higher in constituencies with more 18-40 voters.

H3: Pro-democracy vote share is higher in middle-class constituencies with more 18-40 voters.

III. BACKGROUND: THE 2019 DISTRICT COUNCIL ELECTIONS

The DC elections are part of Hong Kong's semi-democratic system in a convoluted way. As of 2019, the Chief Executive of Hong Kong is elected by a 1,200-member Election Committee. Victors from around 400 constituencies in the DC elections will then elect among themselves 117 members to sit at the election committee (Hong Kong Government 2016). In other words, by becoming district councilors, politicians have an opportunity to elect the city's top leader.

Although DCs themselves are not intended to be organs of political power (Article 97 of Basic Law), DC elections have increasingly become political battlegrounds for parties to gain influence in local districts (W. W. H. Wong, Luen-tim Lui, and W.-m. Lam 2012). Local DCs have become political platforms for political parties to disseminate their political views and ideology. In turn, the HK government also manipulates the DCs to promote and legitimize its policies (W. W. H. Wong, Luen-tim Lui, and W.-m. Lam 2012). To a certain extent, a councilor's past performance in tackling local district issues still counts in voter's consideration of a candidate. The 2007 DC elections saw a landslide victory by DAB (the largest pro-establishment political party in the city) candidates, who won 115 out of 405 seats. The Democratic Party, on the other hand, won only 59 seats. Commentators have attributed pro-democrats' poor performance to the pro-democratic incumbents' lack of concerns for local issues (National Democratic Institute for International Affairs 2007, L. Chen 2015).

In 2017, Occupy Central's co-founder Benny Tai proposed a strategic voting plan ('Project Storm') which urged pro-democrats to emphasize their ability to elect the chief executive in DC campaigns (J. Lam 2017). He believes by getting the 117 seats on the election committee, Beijing would be forced to restart political reform. Tai's plan was deemed optimistic even by the democratic camp (J. Lam 2017). Nonetheless, the events that occurred before the 2019 District Council Elections were out of Hong Kong politicians' expectations. In early 2019, the Hong Kong government was trying to pass an extradition bill which would have formalised extradition agreements with several jurisdictions including mainland China. From 2019 June onwards, large-scale protests broke out across the territory. Protests and violent clashes continued throughout the summer in Hong Kong, leading to the bill's formal withdrawal in late October. Still, protesters continued to press the rest of their five demands¹. In November, two universities were laid siege by the police force in the run-up to the DC elections on November 24. The police used more than 1,400 tear gas canisters each at the Chinese University of Hong Kong (noauthor_tear_2019) and the Hong Kong Polytechnic University (noauthor_hong_2019-1). The DC elections was therefore held in the thick of the democratic movement.

The 2019 DC elections saw the highest turnout in Hong Kong's political history. There are 1096

¹The five demands are: 1) Withdrawal of the extradition bill, which has been achieved. 2) An investigation into alleged police brutality and misconduct 3) A retraction of the official characterisation of the protests as 'riots' 4) Amnesty for all arrested protesters 5) Dual universal suffrage for both the Legislative Council and the Chief Executive

candidates competing in 452 constituencies. Each constituency belongs to one of the 18 districts and councilors meet in these district councils to address local issues. Since the elections were the first since the anti-extradition protests started in June, commentators expected voters to cast their ballot according to their stance on the government's handling of the protesters, as well as the larger democratic movement. Both pro-democracy and pro-establishment camps have politicized the election as well, taking protest-related matters such as investigation into police violence onto their platforms. 115 newcomers joined the race with 0 political experience and put five demands at the centre of their platform. In an election that usually favours candidates with a track record of solving community problems, 81 newcomers won. All except two of them flipped a constituency from pro-establishment (blue) to pro-democracy (yellow).

Since the elections in 2015, 392,601 individuals have registered as new voters. This represents an increase of 12.6% in voter population. 58.34% of the newly registered voters aged under 40 years old (see Fig.III.2, highlighted in red), Hong Kong's post-80s and post-90s who have been leading the localist movements. Coincidentally, it mirrors the 6:4 divide between the yellow and blue camps in the 2019 DC elections.

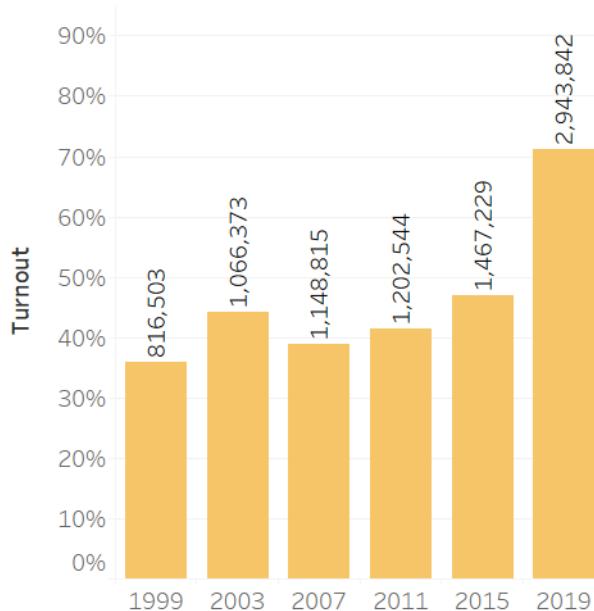


Figure III.1: The 2019 DC elections has the highest turnout in record

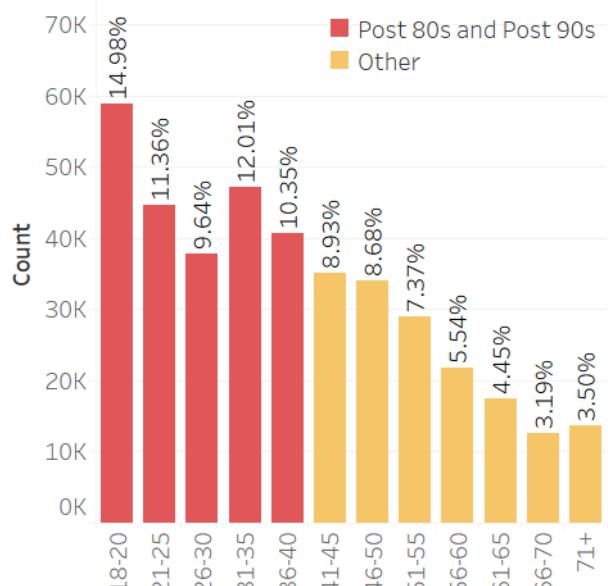


Figure III.2: The post-80s and post-90s made up almost 60 per cent of newly registered voters

Pro-democracy candidates won 388 constituencies, achieving almost 90% representation in the District Councils. While the blue-yellow divide (Fig.III.3, Fig.III.5) might seem that pro-democracy candidates have a landslide victory, the number of swing constituencies is much higher in reality (Fig.III.4, Fig.III.6) demonstrating the importance of a small vote margin.

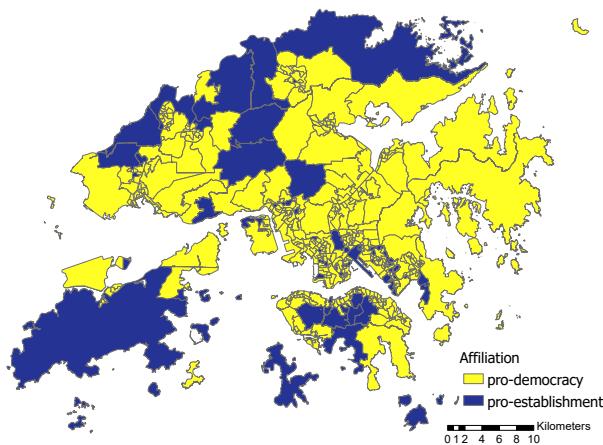


Figure III.3: The divide might seem the pro-democracy camp has an overwhelming victory

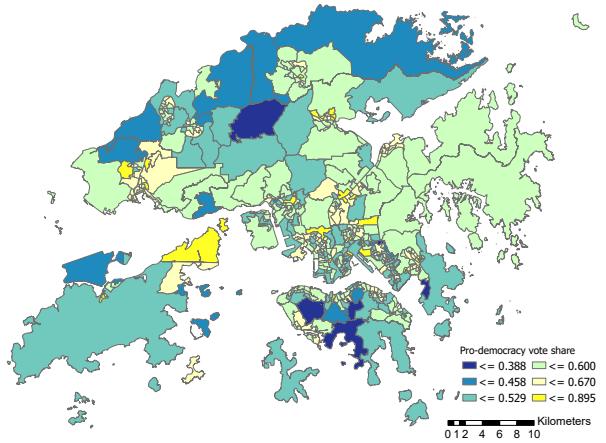


Figure III.4: But the democratic vote share in many constituencies is only slightly bigger than 50%

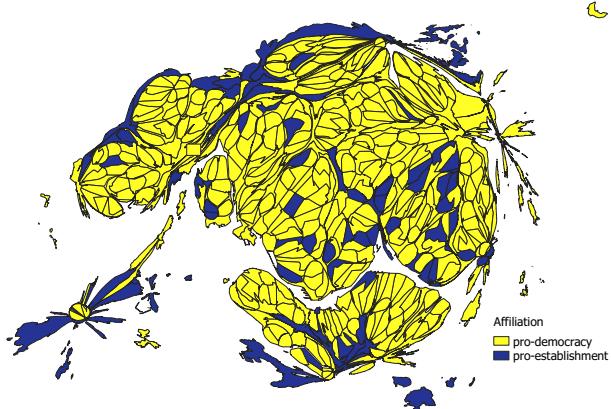


Figure III.5: Affiliation scaled by 2016 constituency population

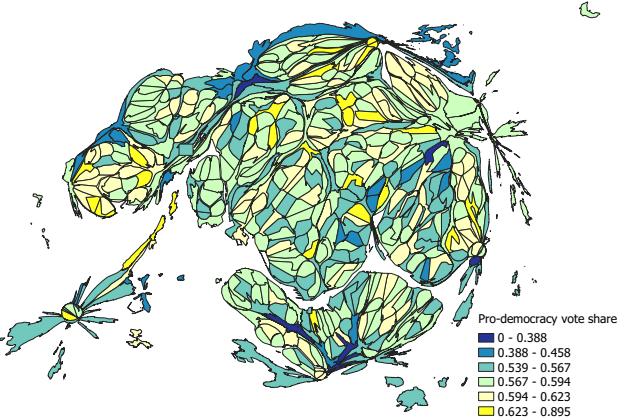


Figure III.6: Vote share scaled by 2016 constituency population

Still, the number of seats the yellow camp won is an unprecedented figure as pro-democracy candidates have historically gotten less than 50% of popular vote in the DC elections (Fig. III.7).

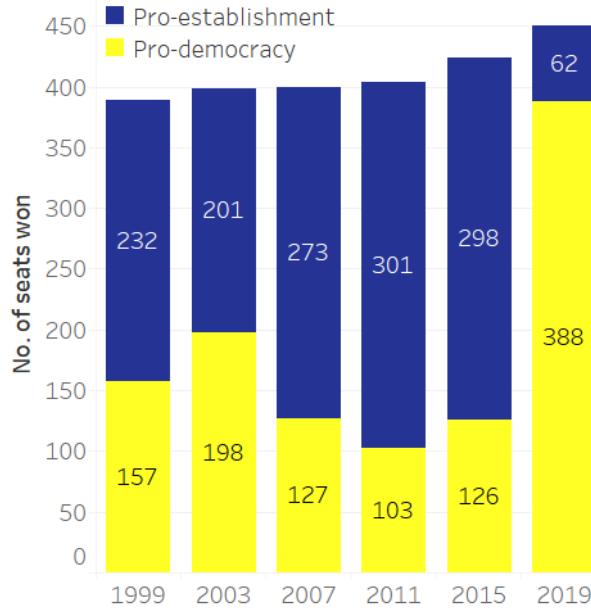


Figure III.7: The proportion of seats won by pro-democrats in 2019 is unprecedented

Although pro-democracy vote share is the highest historically in the 2019 DC election (Fig.III.8), the yellow-blue vote divide (58:42) mirrors the traditional 6:4 divide in the Legco elections (Fig.III.9), which unlike DC elections is a clearly political election.

District Council Elections

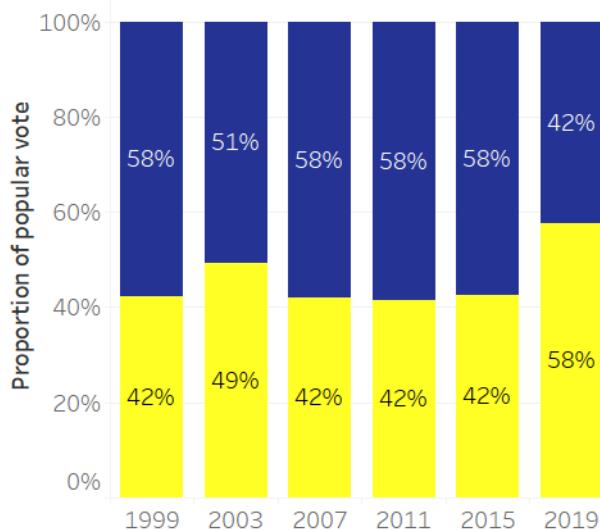


Figure III.8: The 2019 DC vote divide mirrors the historical LegCo elections trends

Legislative Council Elections

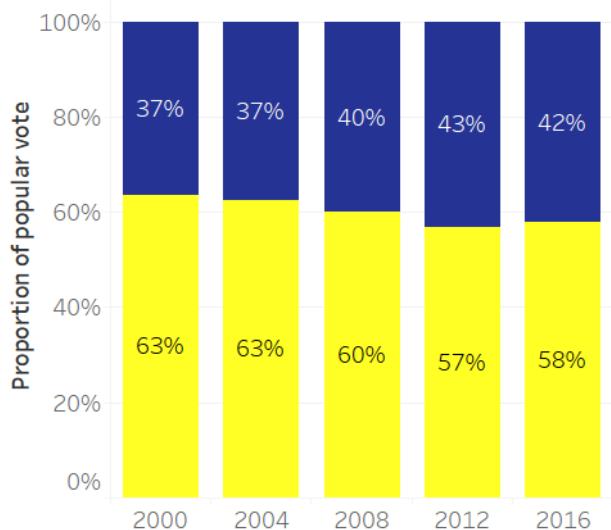


Figure III.9: The historical 6:4 divide between the pro-democracy and pro-establishment camps

Commentators have thus opined that the 2019 DC elections did not actually reflect an increase in support for democracy. Rather, it shows the politicization of a local election. The DC elections use a first past the post system which is sensitive to small vote margin. On the contrary, the LegCo elections use a proportional representation system. This means that more popular vote in the LegCo elections does not necessarily translate into more seats for the pro-democracy camp, because pro-establishment/ independent teams with low votes

might also get a seat after the first seat is allocated, depending on the remainder votes they have. The effect of small vote margin is illustrated in Fig.III.10. While the pro-democracy candidate at Siu Chi won by 56%, the pro-establishment candidate at Ping Shan North won only by 0.045%. Small margin therefore has a huge impact on pro-democracy candidates' performance in the DC elections.

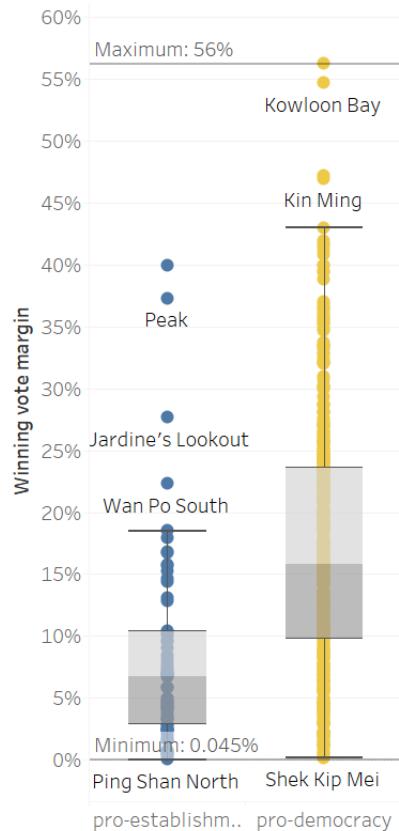


Figure III.10: The smallest vote margin needed to win a constituency is only 0.045%

Since the DC elections are sensitive to small vote margin, any variable whose 1% change leads to more than 1% increase in the pro-democracy vote share is considered influential.

IV. DATA

The main model specification of the analysis is an ordinary least squares (OLS) regression on a cross-sectional dataset. The base unit for the regression is constituency. There are 452 constituencies in the 2019 District Council elections ($n = 452$). The constituency and candidate characteristics are obtained from both official and unofficial channels.

1. DEPENDENT VARIABLE

The dependent variable is the vote share obtained by all pro-democracy candidates in a constituency. The official data for individual candidate vote shares are obtained from the website of the Registration and Electoral Office (REO) of Hong Kong. The political stances (pro-democracy, pro-establishment or independent) are coded by Mr. Ivan Choy, a political researcher at the Chinese University of Hong Kong. I coded the party affiliation based on candidates' declaration on the REO website and media sources. Throughout the analysis, I treat independent and pro-establishment as the same qualitatively. This is because non-partisan/ independent pro-democracy candidates will usually openly declare their stance to appeal to pro-democracy voters. If they don't, they are likely to be nominally independent candidates groomed (Sing 2008) by the Liaison office, an organ of the State Council of the People's Republic of China in Hong Kong.

To see if localist parties have particular appeal to young protesters, I also calculated their vote shares (locvoteshare) at the constituency level. Localist parties are those that advocate the prioritization of local interests and oppose the increased intervention of the mainland Chinese government on local affairs. Many advocated for self-determination or out-right independence from China (Kaeding 2017).

2. KEY VARIABLES OF INTEREST

The key independent variables in this analysis are the proportions of young(18-40) and middle-class voters in the constituency. 18-40 voters are the post-80s and post-90s generations which have been most active in the anti-extradition bill movement. Since 18-40 individuals make up nearly 60% of the newly registered voters in the 2019 elections, I assume most of these young voters have been motivated by the extradition movement to support pro-democrats. I therefore use two measurements: total 19-40 voters [young] and newly registered 19-40 voters [young_new], to distinguish the effect of politically motivated voters from regular voters. I define middle-class by income. The Weberian perspective emphasizes the importance of political influence and socio-economic status in defining the middle class instead of solely income. The Weberian middle class consists usually of white-collar workers who are esteemed for their professionalism. However, the relationship between

the proportion of population working in typical white-collar industries¹ and median income is strongly linear (Fig.IV.1). This means defining middle-class by income is not different from defining middle-class by profession, at least quantitatively.

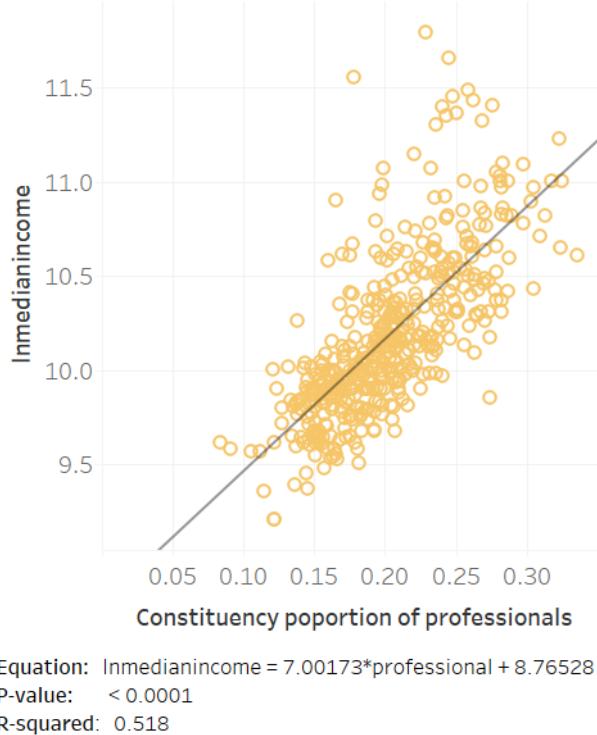


Figure IV.1: Strong correlation between proportion of professionals and constituency median income (log)

I define middle-class using the statistics from the median income of the major housing estates reported in the 2016 census. Major private housing estates are often where the local news classify as "middle-class" constituencies. I used the 25th and 75th percentiles as the cut-off. To see if the results are sensitive to cut-offs, I used the lowest and highest bounds reported in a news report (Citizen News 2019) to define middle-class. The coefficient estimates are reported on Table in the appendix and are very similar in magnitude and direction.

Table IV.1: The cut-offs for each income level

Income level	Cutoff
Low	≤ 18940
Middle	$18940 < \text{income} \leq 39420$
High	> 39420

3. INDEPENDENT VARIABLES

3.1. Constituency-level data

As detailed demographic characteristics at the DC constituency level is only available from the Hong Kong Census which is done every four years, I remapped the 2016 data collected based on the 2015 constituency

¹Out of the 11 industry classification that are available at the constituency level, I chose 1) Information and communications, 2) Financing and insurance 3) Real estate, professional and business services and 4) Public administration, education, human health and social work activities to categorize middle-class workers.

boundaries onto the 2019 boundaries. Although the assumption of the uniform distribution of population can be unrealistic, it should not cause major problem as 387 out of 431 constituencies in 2015 remain the same in 2019. The similarity between the two boundary maps can be seen in Fig.IV.2.

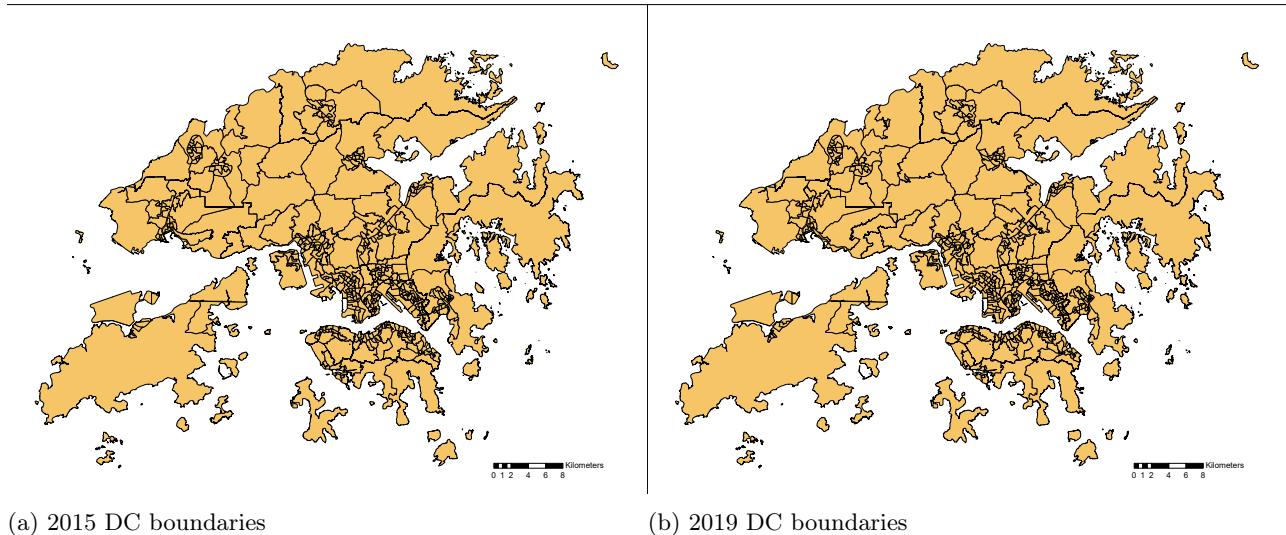


Figure IV.2: Two maps showing the similarity in the two boundary maps

The demographic variables collected from the 2016 census are

- a) *retail* - the number of people working in import/export, wholesale and retail trades [retail]: these are the workers most directly affected by the democratic movements. Protest marches disrupt businesses and harm revenues. The yellow economic circle, a consumer movement where shops with pro-Beijing or pro-police background are vandalised (see Fig. B.1 in the appendix) and those with pro-democracy stances are supported, could also lead to retail workers' strong receptions (support/ resentment) of the movement.
- b) *admin* - the number of people working in public administration, education, human health and social work activities: the industrial actions taken against the extradition bill are particularly salient in certain industries (IT, Design, etc). This variable tests whether there is an industry effect that increase voters' support at the constituency level. Out of the 11 industries recorded by 2016 census, this is the only industry that has a moderately clear pro-democracy leaning²
- c) *postsec* - the number of people with post-secondary education, specifically diploma/ certificate, sub-degree course and degree course.
- d) population in 2016, for scaling purposes

- a) to c) are expressed as a proportion of constituency population.

Data on election-related variables are obtained from the Registration and Electoral Office, or coded with Mr. Choy's candidate dataset.

- a) *middleaged*, *middleaged_new* - voters aged 41-60: They were the city's youths when Hong Kong was transiting from a British colony to a Chinese city. Many among this age group belonged to a "first-

²This claim is based on events such as educators' march on Aug 17, 2019 (Leung and McCarthy 2019), civil servants organising their own protests (Tam and Torode 2019), multiple strikes by social welfare sector (Magramo 2019); sit-ins organised by healthcare staff (Chung and Cheung 2019)

"generation" middle class (Lui and T. W. P. Wong 1994) made in the boom of development in the 1970s and 1980s. Lui(1994) observes that many of the first generation middle class have been "rearguards" who neither supported the Chinese authoritarianism nor spearheaded political reforms at the 1997 handover. They are more likely to be homeowners than the post-80s and post-90s and thus more likely to defend the status quo to protect their asset value(S. H.-W. Wong and Wan 2018). Like for 18-40 voters, I used two measures for the effect of this age group: total and newly registered 41-60 voters. The latter group, I assume, are more motivated by the recent protests to register as voters.

- b) *post90s* - voters aged 18-30: As mentioned in the introduction, 63% of the protesters arrested between June 2019 and May 2020 were between 18 and 30 years old. I want to see if they have more radical political views than the post-80s.
- c) *turnout* - voters' turnout: pro-democrats won disproportionately in an election of historical turnout. It might seem that high turnout is beneficial to the pro-democracy camp.
- d) *totalcand* - total no. of contestants: higher number of contestants is likely to reduce pro-democrats' share.
- e) *bluestreak* - whether there is a pro-establishment candidate that has won the last two DC elections in the constituency: the fact that the pro-establishment candidate won the last two DC elections might show that this is a constituency with deep pro-establishment network. Pro-democrats are therefore likely to get less vote in these constituencies.

Other variables:

- a) *tginterval* - teargas interval: From June to November, the Hong Kong Police Force reported that they used around 16,000 tear gas cannisters. What was different this time compared to the Umbrella Movement was that teargas use was not confined to the city centres. Teargas is used in many neighbourhoods away from the centre as protesters called for guerilla-like tactics and moved around the city to avoid being besieged by the police. This means even voters who are not at the front line of the protests can be negatively affected by the teargas. I assume this will elicit even strong reaction against the police or the protesters, and hence perception about the larger democratic movement.

I first found out the total number of teargas canisters used by the police on a certain date according to their press release (RTHK n.d.). I then average the total number by the number of places which have been teargassed as reported in major newspapers. This average is then assigned to the places. Because this estimation is highly inaccurate, I represent the teargas extent by intervals instead of exact numbers. I chose a geometric interval because teargas use is 0 for over 200 constituencies, while 2 constituencies (the universities) have more than 1,500 canisters used. Fig.IV.3 shows the cutoffs for each teargas interval.

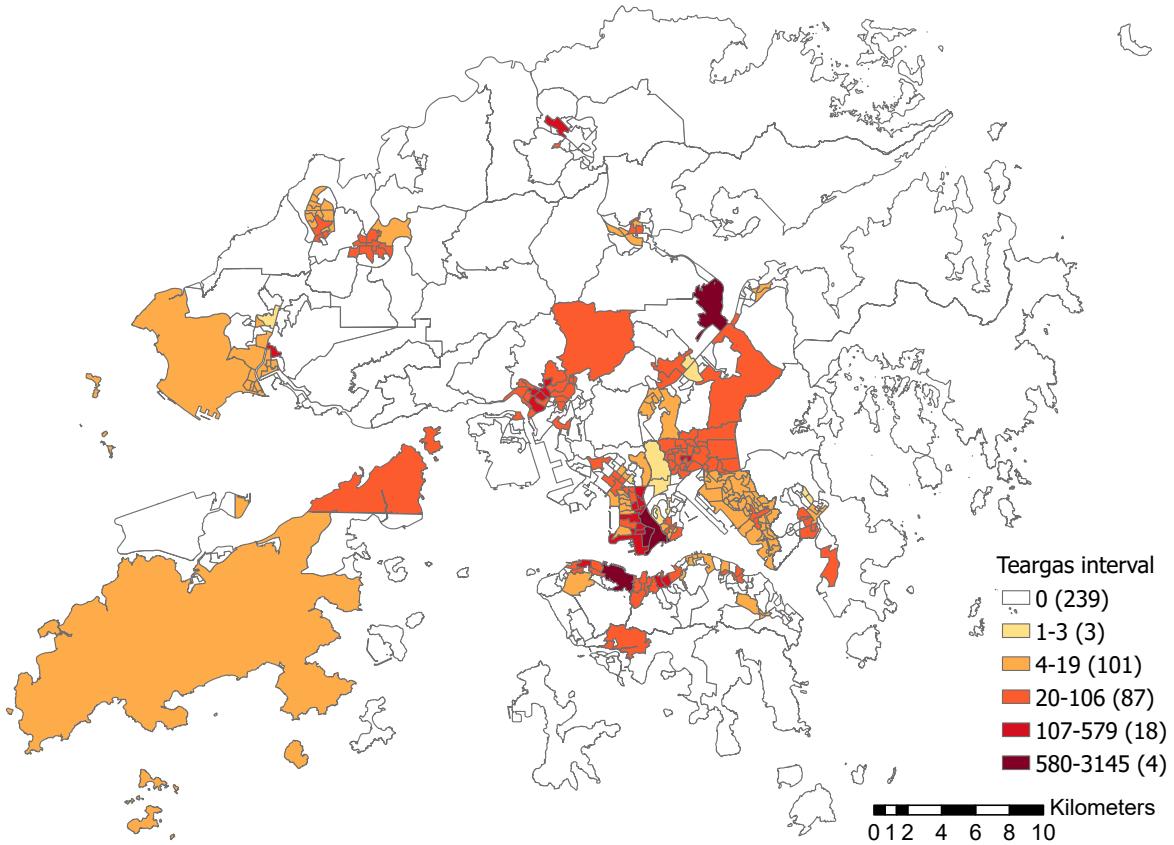


Figure IV.3: Cutoffs used for teargas intervals (frequency is in the brackets)

- b) $\ln pop density$ - population density: Protesters have organised community protests to respond to and sustain the larger anti-extradition bill movement. These are often held at the district centres where the major malls and roads are. A constituency with a higher population density is more likely to be the district centre. Hence voters living there will have more first-hand contact with the violent clashes between the protesters and the police/ protest street art. This could either translate to more empathy for the pro-democracy cause or more irritation at the nuisance caused.
- c) lennon the number of lennon walls: a lennon wall is a large piece of protest street art full of personal messages from the protesters (see Fig.B.2 in the appendix). More lennon walls might allow residents to build an emotional connection with protesters or expose them to insecurity in the neighbourhood ³.

3.2. Candidate-level

From Mr. Choy's dataset I obtained information on the candidate's sex *male* and whether it is their first political election *newcomer*. Information on whether the candidate is a past winner *pastwinner* is scraped from the REO website. These variables are used as controls in a candidate-level regression to act as a robustness check.

³For instance, three pedestrians were sent to the hospital after being a severe knife attack by a man at a lennon wall in Tseung Kwan O (H. Chan 2019)

4. DATA EXPLORATION

This section presents three exploration exercises to see if there is any obvious/ interesting patterns in the data. The descriptive statistics is shown in Table.IV.2.

Table IV.2: Descriptive statistics

	count	mean	sd	min	max
demvoteshare	452	0.563	0.0755	0.00728	0.895
newdemvoteshare	452	0.102	0.221	0	0.736
locvoteshare	452	0.0675	0.187	0	0.735
tginterval	452	1.265	1.408	0	5
lennon	452	0.365	0.684	0	7
retail	452	0.0970	0.0151	0.0557	0.152
admin	452	0.0771	0.0218	0.0325	0.181
middleaged_new	452	0.0309	0.0141	0.00873	0.103
young_new	452	0.0568	0.0144	0.0317	0.147
post90s_new	452	0.0344	0.00884	0.0144	0.0724
middleaged	452	0.368	0.0566	0.242	0.579
young	452	0.313	0.0475	0.187	0.487
post90s	452	0.166	0.0403	0.0825	0.376
postsec	452	0.270	0.106	0.0861	0.553
medianincome	452	29389.0	16182.5	10000.0	132250.0
popdensity	452	76371.6	62475.3	158.1	334693
turnout	452	0.708	0.0406	0.564	0.842
totalcand	452	2.425	0.754	2	10
bluestreak	452	0.208	0.406	0	1

Fig.IV.4 visualises the correlation between different variables in the regression. The dependent variable, *demvoteshare*, has weak correlation with *admin*, and *middleaged_new*. The correlation with our key variable of interest, *young*, is slightly positive as expected. The correlation with newly registered 18-40 voters, *young_new* is negligible. A notable observation is that *turnout* is strongly correlated with *admin*, a cluster of industries whose white-collar workers have actively participated in anti-extradition protests (see section 3.1).

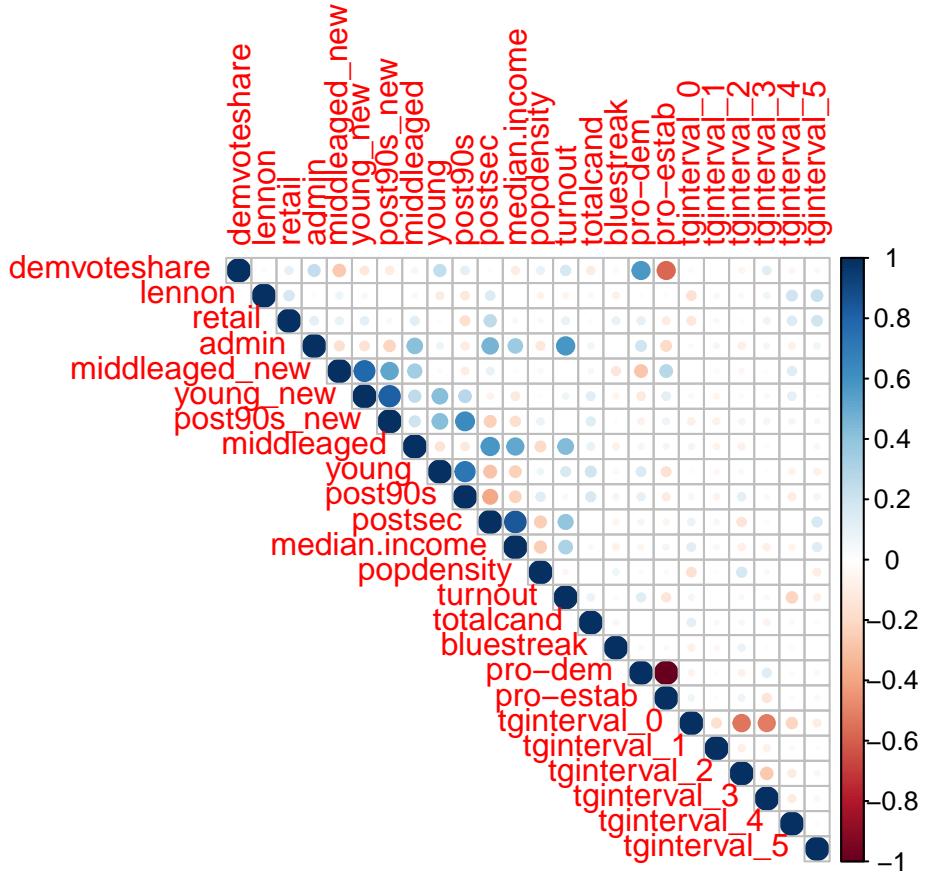


Figure IV.4: Correlation between variables

The loading plot in Fig.IV.5 offers another perspective on understanding the relationship between variables. A principal component analysis (PCA) is done without the dependent variable (*demvoteshare*) to see which variables best explain the variation in the data. The variables with the longest arrow (vectors) are those which have high explanatory power for the difference in the data. If two arrows are close to each other, the two variables they represent are positively correlated. If the two arrows form a 90°angle, they are unlikely to be correlated. If they form an angle more than 90°close to 180°, they are negatively correlated.

As expected, variables representing young voters (*young*, *young_new*, *post90s* and *post90s_new*) are closely correlated. Notably, *middleaged_new* is in the same quadrant with these variables. The correlation suggests that the anti-extradition bill movement has mobilised both young and middle-aged residents to register as first-time voters.

Importantly, both the correlogram and the loading plot point to the extremely strong correlation between education (*postsec*) and income (*median.income*). This means models with both variables included are prone to collinearity.

While middle-income constituencies have a slightly higher average pro-democracy vote share (Fig. IV.6), the bivariate analyses between age and pro-democracy vote share do not reveal obvious patterns. Panel IV.7 shows the correlation between proportion of new voters by age group and pro-democracy vote shares at the constituency level. Three trend lines are constructed according to the income level of the constituency.

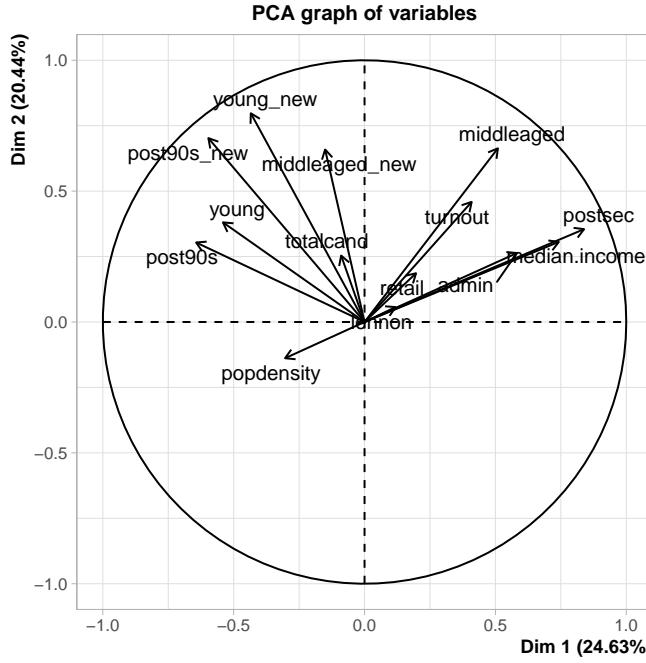


Figure IV.5: The positive correlation between new middle-aged and new young voters show that the protests have mobilised both age groups to register as voters.

At first glance it might seem only new middle-aged voters (Fig.IV.7b) and total young voters (Fig.IV.8a) have a clear downward and upward pattern correspondingly. Note however that the trend lines are not significant across income levels. The only graph that has three significant trends, that of total middle-aged voters (Fig.IV.8b) shows a divide with the age group between income levels.

The significantly negative correlation between new young voters and pro-democracy vote share in middle-income constituencies might seem to reject the hypothesis that there a revolt of a young middle class. It must be stressed, however, that this is an aggregate analysis. The effect of young voters might be overpowered by other factors for this negative correlation to show. The effect of middle-aged new voters might be stronger, for example, as is shown possible in Fig. IV.7b. In addition, the dependent variable here is the total vote share by pro-democracy candidates. The pro-democracy camp does not need a higher total vote share to win at the constituency as long as one candidate gets the highest vote share.

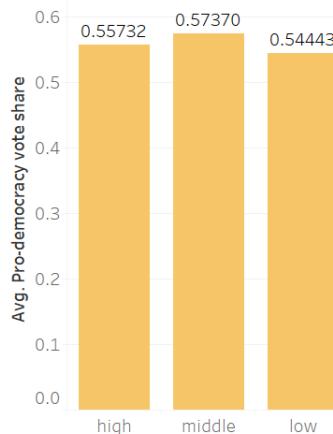
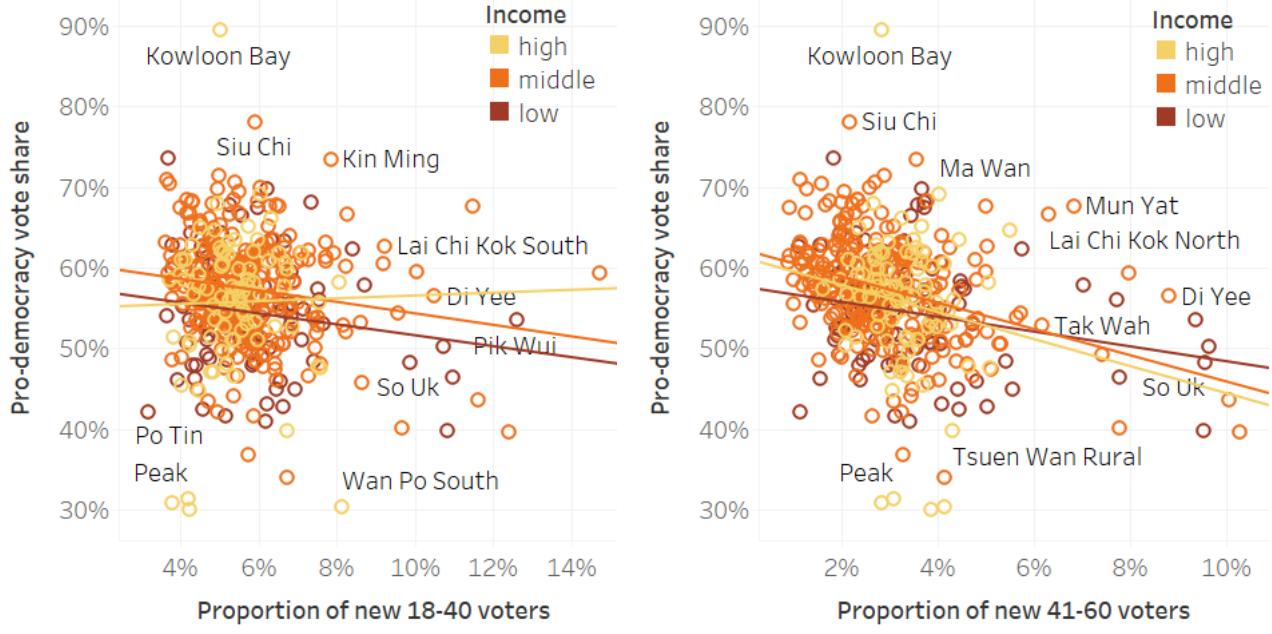


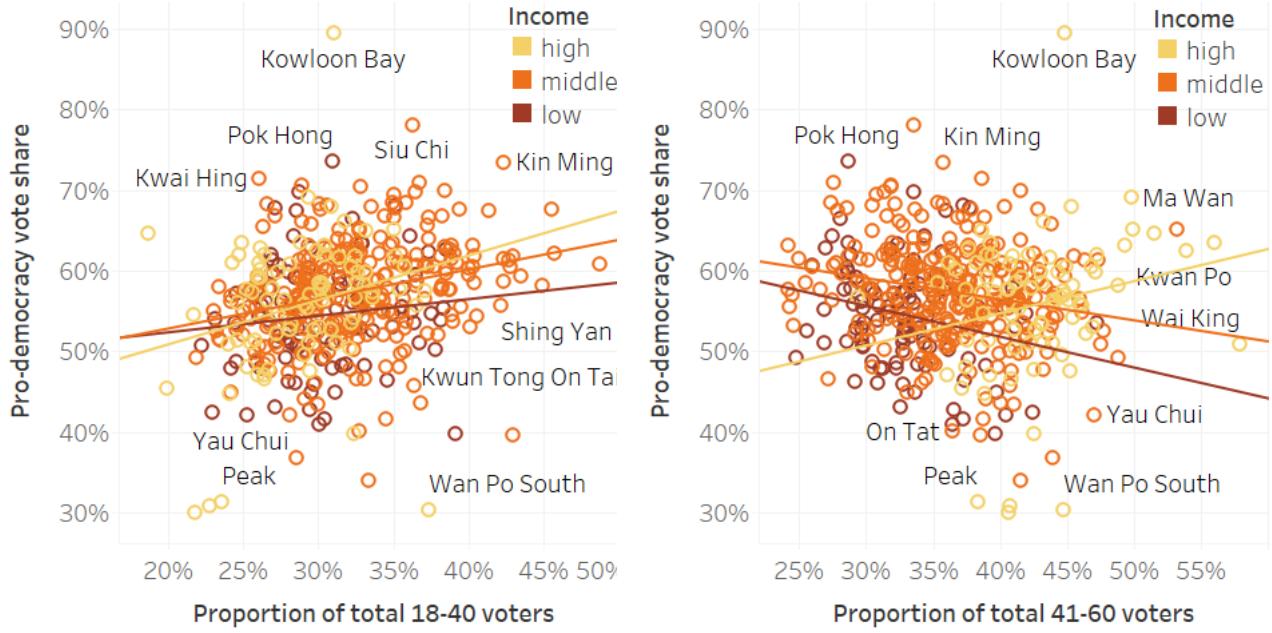
Figure IV.6: The pro-democracy share is slightly higher in middle-income constituencies.



(a) Only the middle-income line is significant

(b) Both middle- and low-income lines are significant

Figure IV.7: Correlation between new voters and pro-democracy vote share



(a) Both high- and middle-income lines are significant

(b) All three trend lines are significant

Figure IV.8: Correlation between age groups and pro-democracy vote share

This pattern for middle-aged voters supplement what is shown in the correlogram and the PCA loading plot: while the protests might have mobilised more youths to register as voters, they also mobilised middle-aged voters who tend to vote against pro-democracy candidates. A multivariate analysis is necessary to control for other factors.

To conclude, the three data exploration exercises conducted in this section provide the following insights:

1. income and education are strongly positively correlated, which makes it difficult to identify their effect

separately because of collinearity.

2. *middleaged_new* and *young_new* are strongly positively correlated, implying that the protests have mobilised citizens in both age groups to become first-time voters.
3. the within-group preferences are not as uniform as one might have assumed. There seems to be an income divide, as well as a new vs. registered voters divide.
4. a higher proportion of new young voters is correlated with a lower pro-democracy vote share in middle-income constituencies, implying these new young middle-class voters might be against democracy. It could also be that these are the constituencies that are more polarized. The effect of young voters might therefore be overpowered by other factors.
5. the correlation between (new/ total) middle-aged voters and pro-democracy vote share appears negative, it seems more of a phenomenon in the middle- and low-income constituencies. Middle-aged voters in high-income constituencies either have an insignificant effect (new) or a positive vote effect (total).

It is with these insights in mind that I choose a methodology to test my hypotheses.

V. METHODOLOGY

This section explains the methodology choice and describes the main specification.

1. MODEL CHOICE

Given the possibility of neighbours' influence and the binary outcome of the election, I have considered three models:

1. spatial models: The simultaneous voting behaviour makes a spatial autoregressive (SAR) model suitable, as neighbouring constituencies are likely to interact and affect each others' decision. Nevertheless, the global Moran's I statistic, which measures the average correlation between neighbours, is only 0.15 (significant at 0.01%).

Local cluster analyses are also carried out to identify high/ low clusters in *demvoteshare*. For the local indicator of spatial association (LISA) test, k-nearest neighbours (knn) scheme is used to conceptualize the spatial relationships. Knn is used instead of distance weighting because the constituencies vary greatly in size and many border the sea. K is set to 5, the average number of neighbours each constituency possesses when the queen contiguity scheme is used. For the hot spot analysis (Getis-Ord Gi), fixed band distance is used as all neighbours within a certain distance have to be taken into account to assess whether a constituency is surrounded by high/ low values. The threshold distance is set at 1.3 km. The average distance calculated by arcGIS for 5 neighbours to be encountered.

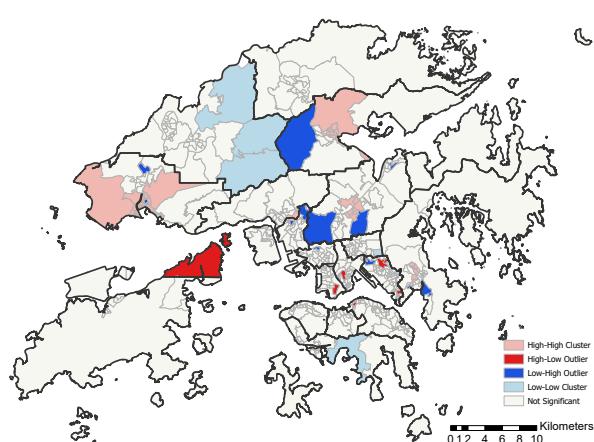


Figure V.1: LISA does not uncover obvious spatial pattern

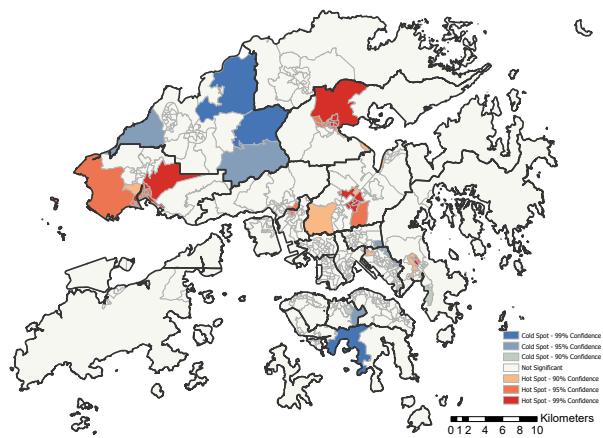


Figure V.2: Hot spot analysis shows that spots found in the same districts are either all hot or all cold

The thick black lines delineate the 18 districts, which contain the 452 smaller constituencies in light grey

lines. Fig. V.1 shows the results of the local indicator of spatial association (LISA). There is no clear spatial pattern either on the map or by the test ($R^2 = 0.08$). The results in Fig. V.2 shows that it is unlikely to find both hot and cold spots in the same district - they are either all hot or all cold. This is consistent with the LISA results, where the high-low (deep red) or low-high (deep cold) clusters tend to be at the border of the districts. This implies that constituencies are more likely to be affected by other constituencies in the same district than by constituencies that are close by. Spatial models that define neighbours by distance will wrongly specify the relationship between constituencies. As coefficient estimates are sensitive to weight choice (Anselin 2002, Gibbons and Overman 2012), I should avoid using spatial models. Spatial models are also more complex and prone to problems such as reflection problem (Manski 1993) and spatial correlated unobservables. I therefore chose to avoid it.

2. logit/ probit model: While the binary outcome (pro-democracy vs. pro-establishment) makes logit/ probit appealing, the aim of the analysis is to understand the dynamics of democratic support rather than simply the victor's affiliation. As seen in Fig.III.3, the outcome map masks the extent of polarization behind the scene. At the same time, because the outcome is highly unbalanced (389 pro-democracy vs. 63 pro-establishment), logit/ probit models tend to drop observations in the regression process. In fact, the lack of variation within certain variables have led to 10% observations being dropped from the logit model. Nonetheless, I used a logit model in section 1.5 as one of the robustness checks.
3. ordinary least squares (OLS): OLS is easy to interpret as it allows a linear relationship between outcome and the predictor. Although pro-democracy vote share ranges only between 0 and 1, OLS is not a big problem as many of the variables are also expressed as proportion. Compared to logistic regression, it allows for both fixed effect and standard error clustering without dropping any observation. It is also more suitable than a spatial model as neighbours' influence is likely to occur on a district level rather than on a proximity basis.

2. MODEL

The main model is an OLS regression of pro-democracy vote share at the constituency level.

$$demovoteshare_{ij} = \alpha + \beta_1 young_new_{ij} + \beta_2 middleaged_new_{ij} + \theta'_{ij}\sigma + \gamma_j + \varepsilon_{ij} \quad (\text{V.1})$$

$$demovoteshare_{ij} = \alpha + \beta_1 young_{ij} + \beta_2 middleaged_{ij} + \theta'_{ij}\sigma + \gamma_j + \varepsilon_{ij} \quad (\text{V.2})$$

i and j stand for constituency and district respectively. All variables are described in Chapter IV. $young_new$ and $young$ are our key variables of interest. Although $middleaged_new$ and $middleaged$ are not our key variables of interest, I include them as they are the only variables that change depending on whether total or new young voters are used in the specification. θ' is a matrix of constituency characteristics. γ_j denotes the district fixed effect. ε_{ij} is an error term that is assumed to be independent and identically distributed and uncorrelated with the regressors.

All fixed effect models are run with cluster-robust standard errors (clustered at district) to control for within-district correlation and heteroskedasticity(Colin Cameron and Miller 2015). Degrees-of-freedom correction is

also applied as the number of clusters (18) is small relatively to the number of regressors (16).

VI. EMPIRICAL FINDINGS

This section presents the regression results and discuss the findings.

1. REGRESSION RESULTS

1.1. Constituency-level regression

Table VI.1 presents the OLS results on all constituencies. The dependent variable in models (1)-(6) is demvoteshare. The effect of new and total voters are measured using *young_new/ middleaged_new* and *young/ middleaged* correspondingly. Models (1) and (2) are OLS regressions with age and income variables only. Models (3) and (4) include the full set of control variables. Models (5) and (6) are OLS with district fixed effects and standard errors clustered at district level. In other words, (5) and (6) are Equation. V.1 and V.2 respectively. All the odd number models estimate the effect of new voters in each age group, while the even number models estimate the effect total voters of each age group.

Table VI.1: Regression results for all constituencies

	(1)	(2)	(3)	(4)	(5)	(6)
	demvoteshare	demvoteshare	demvoteshare	demvoteshare	demvoteshare	demvoteshare
young_new	0.755** (0.348)		1.147*** (0.351)		1.189*** (0.295)	
middleaged_new	-1.827*** (0.357)		-2.104*** (0.369)		-2.014*** (0.419)	
young		0.263*** (0.0672)		0.334*** (0.0704)		0.232*** (0.0744)
middleaged		-0.189*** (0.0667)		-0.137* (0.0701)		-0.0818 (0.115)
lnmedianincomec	0.0306*** (0.00803)	0.0513*** (0.00978)	-0.00561 (0.0185)	0.0167 (0.0181)	-0.00306 (0.0277)	0.0139 (0.0294)
lnmedianincomec2	-0.0812*** (0.0117)	-0.0888*** (0.0118)	-0.0616*** (0.0135)	-0.0709*** (0.0133)	-0.0737*** (0.0154)	-0.0831*** (0.0182)
tginterval1			-0.0184	-0.0199	-0.0172	-0.0157

		(0.0189)	(0.0191)	(0.0127)	(0.0154)	
tginterval2		-0.0173** (0.00772)	-0.0158** (0.00780)	-0.0149* (0.00734)	-0.0124 (0.00847)	
tginterval3		0.000658 (0.00782)	0.00386 (0.00790)	0.00981 (0.00834)	0.0111 (0.00933)	
tginterval4		-0.0195 (0.0158)	-0.0240 (0.0158)	-0.0211 (0.0138)	-0.0236* (0.0135)	
tginterval5		-0.0138 (0.0331)	-0.00677 (0.0333)	-0.0237 (0.0175)	-0.0130 (0.0201)	
lennon		0.00122 (0.00457)	0.00184 (0.00461)	0.00306 (0.00436)	0.00291 (0.00399)	
retail		-0.0422 (0.223)	-0.210 (0.224)	-0.111 (0.291)	-0.207 (0.271)	
admin		0.464** (0.194)	0.551*** (0.192)	0.148 (0.161)	0.249 (0.166)	
postsec		0.115 (0.0711)	0.106 (0.0719)	0.235* (0.114)	0.202 (0.134)	
lnpopdensity		0.0109*** (0.00210)	0.0115*** (0.00218)	0.0138*** (0.00281)	0.0141*** (0.00292)	
turnout		0.00410 (0.0981)	-0.0750 (0.101)	-0.151 (0.114)	-0.197 (0.123)	
totalcand		-0.0108*** (0.00389)	-0.0132*** (0.00396)	-0.00871* (0.00435)	-0.00979** (0.00398)	
bluestreak		-0.0215*** (0.00724)	-0.0161** (0.00722)	-0.0200*** (0.00528)	-0.0150** (0.00532)	
constant	0.593*** (0.0136)	0.568*** (0.0344)	0.430*** (0.0675)	0.443*** (0.0696)	0.496*** (0.0762)	0.501*** (0.0847)
R-squared	0.201	0.182	0.298	0.286	0.318	0.285
Residual deg. of freedom	447	447	434	434	17	17
N. of obs	452	452	452	452	452	452
Standard errors	ols	ols	ols	ols	cluster	cluster

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

I refer mainly to the results in models (5) and (6). The effect of new voters are significant across all specifications. The effect of new young voters (*young_new*) increases substantially as the model becomes more complex, suggesting that new young voters' support for democracy are likely to correlate with other factors and become stronger once other factors are controlled.

The negative effect of new middle-aged voters (*middleaged_new*) on pro-democracy vote share is stronger than that of new young voters, although its effect slightly decreases as the model restrictions increase. Every 1% increase in the proportion of new 41-60 voters in the constituency is associated with 2.01% decrease in pro-democracy vote share, whereas the same increase in the proportion of new 18-30 voters is associated with 1.19% increase in pro-democracy vote share. Both coefficients are significant at 1% level.

The effect of total young voters is 0.232. It is lower than new young voters but is also positive and significant across all specifications. The significantly negative effect of total middle-aged (*middleaged*) voters decreases and loses its significance when constituency controls and district effects are accounted for. This suggests that the political preference within the 41-60 age group might be more heterogeneous than that of the 18-40 age group. For the former, it could be mainly the new voters who are voting against pro-democracy candidates.

The quadratic term of *lnmedianincomec* - *lnmedianincomec2* - is added to allow for a curvilinear relationship between income and pro-democracy vote share. *lnmedianincomec* is the logarithmic form of median income centered on its mean. *lnmedianincomec2* is the quadratic term of *lnmedianincomec*. *lnmedianincomec* is centered on its mean to reduce the collinearity between two terms. In fact, the Pearson correlation between *medianincome* and its squared term *medianincome*² is 0.95, whereas the Pearson correlation between *lnmedianincomec* and *lnmedianincomec2* is only 0.51. Centering the log form of median income on its mean is also to reduce the correlation between *medianincome* and *postsec*, which in section 4 is found to be extremely high. The negative and consistently negative value of *lnmedianincome2* suggests that income indeed has a concave relationship with pro-democracy vote share. In other words, as median income increases, pro-democracy vote share increases then decreases. This means middle-class constituencies tend to vote for pro-democracy candidates more. since the highest R-squared value in all the models is 0.318, the R-squared (0.2) in models (1) and (2) imply that the age and income variables account for a big part of the model's explanatory power.

It is also worthy to discuss other covariates. The extent of teargas does not have a significant effect on pro-democracy vote share, although the signs are generally negative. The number of *lennon* walls does not have a significant effect either. It could also be that *lennon* wall appeals mainly to young voters, which means its effect is negligible when young voters are added to the regression. *lnpopdensity* is significant and positive across all specifications. High population density is correlated with low median income (Fig. IV.5). Since median income is controlled, however, the positive effect suggests that in district centres where protests are organised, increased exposure to protests might increase support for the pro-democracy camp.

It is interesting to note that among the two industry variables added, *admin* is significantly positive when district fixed effects and within-district correlation are not accounted for. However, once the effect of district they live in is accounted, the effect of effect of *admin* disappears. This explains the district character might actually be more influential than peer effect of career network.

Education (*postsec*) only has a significant effect on pro-democracy vote share when the effect of new voters is measured in model (5). As discussed in section II.2, liberal studies as a HKDSE subject was introduced in

2012 and encouraged students to critically evaluate global and local affairs. Having a degree is therefore not necessarily correlated with pro-democracy leanings since school leavers also have to undergo this high school curriculum. Furthermore, there might be a divide between asset and non-asset owners within the educated group. Asset owners have more interest at stake and tend to defend the status quo. It could be that after controlling for income, which is proxy for asset ownership, education has no significant effect.

The negative effect of *totalcand* and *bluestreak* are expected as a fiercer race tends to decrease pro-democracy vote share and having a super candidate from the pro-establishment camp means the constituency has a deep pro-establishment connection. Higher turnout, however, has no significant effect even though the pro-democracy camp's landslide victory coincides with a historical turnout.

The main model therefore affirms H2 - Pro-democracy vote share is higher in constituencies with more 18-40 voters - as new and total 18-40 voters are consistently associated with a higher pro-democracy vote share. However, it rejects H1 - The presence of middle class in a constituency is unlikely to have a significant effect on pro-democracy vote share because of the age divide within the class. - as the quadratic term on income is consistently and significantly negative. Does this mean that middle-aged voters in middle-class constituencies also support the pro-democracy camp? I attempt to understand the voter dynamics in middle-class constituencies using another specification.

1.2. The age divide within middle-income constituencies?

While adding interaction term might help, interacting income and its quadratic term with the age variables will create 7 interaction terms between four continuous variables in each model and makes it extremely difficult to interpret. I therefore opt for a simpler subsetting of data and re-run the regressions to estimate the coefficients.

The rationale behind the division of constituencies by income is described in section IV.2. All regressions are run with district fixed effects and standard errors clustered at district level.

Table VI.2: Regression on constituencies subsetted by income

	Low-income		Middle-income		High-income	
	(1) demvoteshare	(2) demvoteshare	(3) demvoteshare	(4) demvoteshare	(5) demvoteshare	(6) demvoteshare
young_new	0.815 (1.096)		1.681*** (0.367)		-1.789 (2.014)	
middleaged_new	-1.500 (0.988)		-2.814*** (0.460)		3.757*** (1.262)	
young		0.153 (0.164)		0.266** (0.125)		-0.648* (0.310)
middleaged		-0.167 (0.216)		-0.0676 (0.136)		0.325 (0.245)
constant	0.331* (0.158)	0.442* (0.226)	0.364*** (0.0855)	0.328*** (0.100)	0.748*** (0.248)	0.913*** (0.279)
R-squared	0.220	0.183	0.359	0.265	0.397	0.417
Residual deg. of freedom	14	14	17	17	16	16
N. of obs	99	99	271	271	82	82

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

It can be seen in Table VI.2 that the divide between new voters is the strongest in middle-class constituencies, with both *young_new* and *middleaged_new* significant at 1% level. The effect of *middleaged_new* is still larger than that of *young_new*. The coefficient on *young* is positive (0.266) and significant at 5% level in middle-income constituencies. The coefficient on *middleaged* is insignificant across all specifications, providing more evidence to believe that middle-aged voters are not united against the yellow camp.

Young voters do not seem that united either. In fact, when only high-income constituencies are considered, the sign on *young* turns negative and is significant at 10% level. The sign on *young_new* is also negative, although it is insignificant. This is contrasted by the positive sign on *middleage_new* whose effect is the largest in the table (3.757). It seems while new middle-aged voters in low- and middle-income constituencies register to vote against the yellow camp, their counterparts flock to support pro-democracy candidates.

This regression provides some grounds to reject the second part of H1. Table VI.1 shows a marked age divide within the new voters. Nevertheless, when constituencies are separately considered the blue-yellow preferences do not appear to be divided by age, as is shown by new middle-aged voters' overwhelming support for democracy in the high-income constituencies. This is in line with Fig. IV.7b and Fig. IV.8b where high-income constituencies had an insignificant downward trend and an upward trend correspondingly. The insignificant coefficient on *middleaged* in model (4) and the negative coefficient on the quadratic term of income (*lnmedianincome2c*) in Table VI.1 suggests that while new 41-60 voted against pro-democracy candidates, many registered 41-60 middle-class voters might have actually voted for pro-democracy candidates.

Table VI.2 also affirms H3 - Pro-democracy vote share is higher in middle-class constituencies with more 18-40 voters - as is shown by the positive and significant coefficients on both *young_new* and *young* in model (3) and (4).

1.3. Additional analyses

Since the a district councilor's role is to address local socio-economic/ hygiene issues, the possibility that pro-establishment candidates lost the 2019 election simply because they did a poor job in solving community problems is still open. The null hypothesis that pro-establishment councilors lost votes because of poor past performance is tested in section 1 in the appendix. The coefficients reported provide sufficient evidence to reject the null hypothesis.

The adverse health impacts of teargas, including contamination on food products and harm to elderly and children, are often thought of as having provoked voters's anger against the establishment. In section 2 in the appendix, I ran a regression only on constituencies that flipped from pro-establishment to pro-democracy to test the null hypothesis that teargas has no effect on pro-democracy candidates' victory. The evidence is insufficient to reject the null hypothesis.

1.4. Who do the localists appeal to?

The pro-democracy primaries held in early July 2020 confirmed the localist parties' status as the new dominant force of the opposition. In this unofficial ballot held by the pro-democracy camp to screen out less popular candidates for the September LegCo elections, which are now cancelled due to the government's coronavirus concerns, many pan-democrats from the more moderate, traditional camp lost to young localist candidates (Soo 2020). It is therefore important to understand whether localist support has the same age/ income dynamics as

the more general pro-democracy support.

I ran the regression only on constituencies where at least one localist candidate ran for the councilor seat. There are 54 such constituencies. Instead of pro-democracy vote share, the dependent variable now becomes localist vote share (*locvoteshare*). I separate *young* into its sub-groups: *post80s* and *post90s*, to see if localists have a particular appeal to the youngest voters. All regressions are run with constituency controls, district fixed effects and standard errors clustered at district level.

Table VI.3: A regression on the localists' appeal

	(1) locvoteshare	(2) locvoteshare	(3) locvoteshare	(4) locvoteshare
post90s_new	7.858** (3.110)			
post80s_new		4.575* (2.462)		
young_new			5.767** (1.904)	
post90s				1.612*** (0.489)
post80s				1.550** (0.611)
young				1.589*** (0.471)
middleaged_new	-6.746*** (1.865)	-6.913*** (1.589)		
middleaged			1.222** (0.424)	1.230** (0.409)
lnmedianincomec	0.00490 (0.161)	0.00306 (0.151)	-0.185 (0.147)	-0.185 (0.142)
lnmedianincomec2	0.00728 (0.136)	-0.00858 (0.121)	-0.0461 (0.141)	-0.0441 (0.141)
_cons	1.447*** (0.392)	1.369*** (0.428)	0.725*** (0.109)	0.713*** (0.129)
constituency controls	✓	✓	✓	✓
R-squared	0.456	0.420	0.563	0.563
Residual deg. of freedom	10	10	10	10
N. of obs	54	54	54	54

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

As expected, localists have the most appeal to new post-90s voters. The association is staggering: Every 1% increase in the proportion of new post-90s voters is associated with 7.9% increase in localist vote share. The support for localists is consistent among young voters, although with varying degrees. The effect of new middle-aged voters remain negative. The effect of total middle-aged voters is unexpectedly positive and significant. Income and its quadratic term appear to have no correlation with local vote share.

Nevertheless, one must interpret this regression with caution. Localist parties' decision to run in certain

constituencies is strategic. For instance, team Chu, a team assembled by the localist LegCo member Eddie Chu, targets New Territories West constituencies which have been the "home turf" of rural committee members. The Yuen Long incident, where metro passengers were attacked indiscriminately by mobsters in July 2019, enraged many New Territories citizens as the rural committees are claimed to be backing the gangsters. There was therefore a strong popular desire to get rid the "rural triads" (鄉黑). Since localist did not run in all constituencies, the coefficients might reflect the characteristics of these particular constituencies more than the general appeal of localists to different age groups. Still, table VI.3 shows that localists appeal to both young and middle-aged voters in constituencies where they ran. What is more, the demographic characteristics (income/age) in constituencies where localists ran do not seem particularly different from others (Fig. VI.1a, VI.1b), suggesting that even if voters in these constituencies have been agitated by certain protest-related events to support localists, other constituencies might act similarly if they are exposed to the same events.



Figure VI.1: Constituencies where localists ran do not have significantly different demographic make-up compared with other constituencies

1.5. Robustness checks

Lastly for this section, I ran two robustness checks.

Logistic regression

The first robustness check is a logit model on the victor's affiliation in the 452 constituencies. Constituencies with a pro-democracy candidate elected are assigned 1 on the dependent variable $affiliation_{19}$. Coefficients in table VI.4 are largely similar in magnitude and direction compared with the main specification. New voters in both groups continue to have large effects on pro-democracy vote share, with new middle-aged voters have a negative effect on pro-democracy vote share that is stronger than new young voters' positive effect. Income also has a concave relationship with pro-democracy candidate's victory, as is reflected by the negative and significant coefficient on the quadratic term of income ($lnmedianincomec2$).

Coefficients on total young and middle-aged voters, however, are slightly different from the results in the main regression. The coefficient on total young voters loses significance in model (4). It is not a big concern since model (4) dropped 44 observations from two districts and constituencies where $tginterval5$ equals to 1, as they are all won by a pro-democracy candidate. Coefficients on *middleaged* are now significant. Since the regression on middle-class and localist constituencies have shown that 41-60 voters as a group is positively correlated with pro-democracy vote share, it is more likely that logistic regression fails to capture the division within the 41-60 voters.

Table VI.4: Logistic regression as a robustness check use

	Fixed-effect			SE-clustered	
	(1) <i>affiliation</i> _19	(2) <i>affiliation</i> _19	(3) <i>affiliation</i> _19	(4) <i>affiliation</i> _19	(5) <i>affiliation</i> _19
young_new	43.27** (19.71)		43.65* (22.66)		42.19** (19.99)
middleaged_new	-80.98*** (19.59)		-75.79*** (21.90)		-76.52*** (19.87)
young		9.300** (4.072)		3.689 (4.906)	7.690* (4.245)
middleaged		-10.64*** (3.836)		-8.424* (4.429)	-9.501** (3.907)
lnmedianincomec	0.295 (1.004)	1.411 (0.933)	0.0375 (1.095)	0.728 (1.026)	0.302 (1.002)
lnmedianincomec2	-2.343*** (0.709)	-2.708*** (0.687)	-2.620*** (0.785)	-2.896*** (0.750)	-2.362*** (0.711)
constant	-2.356 (3.576)	0.316 (3.485)			-1.545 (3.559)
constituency controls	✓	✓	✓	✓	✓
N. of obs	448	448	408	408	448

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Top pro-democracy candidate

The second robustness check is a candidate level regression on top pro-democracy candidates only. I picked the pro-democracy candidate with the highest vote share from each constituency because the pro-democracy camp often entreat voters to concentrate vote on one candidate in order to win the seat. Using the top candidate reduces correlation between unobserved strategic voting call and the independent variables. The dependent variable is individual vote share. Only models (3) and (4) are run with district fixed effect and error clustered at district level.

Table VI.5: Regression on top one pro-democracy candidate

	(1) voteshare	(2) voteshare	(3) voteshare	(4) voteshare
newcomer	-0.0389*** (0.00632)	-0.0336*** (0.00687)	-0.0296*** (0.00542)	-0.0235*** (0.00611)
male	-0.00647 (0.00668)	-0.00802 (0.00726)	-0.00116 (0.00649)	-0.00165 (0.00701)
incumbent	0.0773*** (0.00645)	0.0754*** (0.00693)	0.0706*** (0.00741)	0.0709*** (0.00677)
young_new	1.710*** (0.291)		1.611*** (0.325)	
middleaged_new	-2.903*** (0.297)		-2.581*** (0.349)	
young		0.288*** (0.0603)		0.222** (0.0950)
middleaged		-0.0457 (0.0502)		-0.0791 (0.0680)
lnmedianincomec			-0.00972 (0.0244)	0.0158 (0.0289)
lnmedianincomec2			-0.0589*** (0.0133)	-0.0739*** (0.0166)
constant	0.547*** (0.0129)	0.481*** (0.0286)	0.548*** (0.0673)	0.551*** (0.0807)
constituency controls			✓	✓
R-squared	0.431	0.335	0.508	0.449
Residual deg. of freedom	446	446	17	17
N. of obs	452	452	452	452
Standard errors	ols	ols	cluster	cluster

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Important to note here is that the comparison is between candidates within the pro-democracy camp but not between pro-democracy and pro-establishment candidates. The coefficient on newcomer, for instance, tells us in two hypothetically equal constituencies, the additional vote share a newcomer will get compared to her experienced counterpart (for more information on newcomer see Chapter III). The negative and significant coefficient on *newcomer* suggests that just because newcomers' are passionate for the democratic cause does

not mean they are necessarily evaluated more favourably than experienced local district councilors.

The coefficients on the age variables are similar in magnitude and same in direction to those in Table VI.1. Income still has a concave relationship with a pro-democracy candidate's vote share. The rejection of H1 and the affirmation of H2 and H3 therefore hold up in the robustness checks.

2. DISCUSSION OF FINDINGS AND LIMITATIONS

Three observations have been persistent throughout the analysis. First, new voters both young and middle-aged have been a significant driving force of the results. Presumably, they have both been mobilised by the recent protests to vote. While regressions on all constituencies show that new young voters are yellow and new middle-aged voters are blue, their effect seems to driven mainly by the two age groups in the 271 middle-class constituencies. The effects of age are insignificant in the poorest constituencies, while the yellow-young and blue-middleaged stereotypes reverse in high-income constituencies (Table VI.2).

This leads to the second point: that the age divide between 19-40 and 41-60 voters is not clear. There might be a concave relationship between asset ownership and pro-democracy support. Young voters in high-income constituencies are likely to be at the start of their career rise and are more likely to condemn social instability to protect their asset values. Middle-aged voters in the high-income constituencies, on the other hand, might have more social-minded/ post-materialistic pursuits as they have gained a good footing in the society.

Third, that the middle-class voters tend to support pro-democracy candidates. This is reflected in the 1) negative coefficient on the quadratic term of median income, 2) the positive effect of total young voters and ambiguous effect of total middle-aged voters in middle-class constituencies 3) the higher average pro-democracy vote share in middle-income constituencies compared to high- and low-income constituencies. Because of the strong antipathy of new 41-60 voters in middle-income constituencies, however, indicating the democratic movement as the revolt of the middle class in general might not be as accurate as referring it as the revolt of a young middle class.

The results can also be used to assess the two groups of reasons mentioned in chapter 2 to explain for the grievances of Hong Kong youth. It is unclear whether post-materialism as an outlook, if it can explain the desire for democracy, is only embraced by the post-80s and post-90s. In other words, it is not clear whether the ideological divide is generational. Regression on localist vote share suggests that the negative effect of new middle-aged voters is likely to have been outsized by the positive support of registered middle-aged voters for the coefficient on *middleaged* to be positive and significant (Table VI.3). The strongly positive and significant vote effect of *middleaged_new* in Table VI.2 also indicates support for pro-democracy candidates within the 41-60 voters group. Focusing on a "generational difference" ignores the general appeal of values such as justice and freedom to educated middle-aged voters.

There is some evidence that professional youths are dissatisfied with the government because of unaffordable housing prices. The coefficients on *young_new* and *young* are only significant in middle-income constituencies in Table VI.2. In contrast, the young voters in high-income constituencies who are more likely to own homes do not show a pro-democracy inclination. Nonetheless, without variable on housing prices, it is hard to argue whether middle-class youths are mobilised because they are embittered by the inability to obtain either private or public housing, or because of other factors such as education or peer effect from the workplace.

Since neither a good instrumental variable for age nor individual data is available, the extent to which

this analysis can draw inference rather than correlation is limited. Nonetheless, the case is strong for the highly spatial nature of voters' preference. The leaderless, participatory emphasis of the anti-extradition bill movement has encouraged residents to organise their own district protests and help the movement "blossom around the city" (遍地开花). Each district therefore has a distinct relationship with the anti-extradition bill movement, as is reflected in district protests, "yellow shops" (A. Chan 2019), lennon walls and vandalism on metro stations (Yau 2019). Some protest art with a tongue-in-cheek twist of district landmarks/ recollection of district incidents can be found in the appendix.

District-specific events also have substantial impact on voters' support for the pro-democracy camp. As discussed in section VI.3, the anger of alleged police-rural triad collusion in the Yuen Long incident has significantly boosted the appeal of localists running in New Territories West. The significantly positive effect of *popdensity* also suggests that constituencies more exposed to the protests are likely to support pro-democracy candidates. Individual data which ignore constituency characteristics and within-district correlation are likely to over/ underestimate the effect of voters from different age groups, as is shown by the difference in coefficient estimates between models (3) and (4) vs. models (1) and (2) in Table VI.1. What is more, candidates at DC elections can win at incredibly low margins. While individual data might be useful for profiling the typical "dissident", it ignores the competition of different factors at the constituency level that determine electoral outcome.

A big limitation comes from the lack of housing-related variables. I expect to see a negative correlation between the degree of housing/ rent affordability and pro-democracy vote share. The data is available from the Land Registry but at an exorbitant cost since four years of data are required. I also expect to see a significantly negative effect from the proportion of homeowners at least on localist if not pro-democracy vote. I would also like to get proportion of mainland Chinese migrants in the constituency but the data is only available at a cost.

Another limitation is identifying what exactly the pro-democracy voters are supporting. Are they only pushing for protest-related demands such as a proper investigation into police violence and release of protesters, or all five demands including a democratic election? Are they pushing for the city's independence or the upholding of "one country, two systems"? The wide pro-democracy spectrum and the leaderless nature of the movement have been reasons why observers cannot quite pin down where it is heading. I am therefore hesitant to conclude that the analysis reveals the young middle-class voters' support for democracy rather than their dissatisfaction with the establishment.

There are various policy implications for this analysis. The young voters' dissatisfaction is so strong that they are ready to politicize any election and organize unofficial polls to express their opinions peacefully alongside with radical frontliners. The sentiment is often populist, as is epitomized in the slogan "larm chao" (攬炒), or as online forum users like to quote from the film series Hunger Games: "If we burn, you burn with us." The 2019 DC elections were for many pro-democracy voters an opportunity to cement the non-cooperation movement at the district level. As socio-economic policies (e.g. infrastructure construction) require the facilitation of and feedback from the district councils, pro-democracy councilors can refuse to comply with the government or prioritize motions for protest-related demands over local policies. The unexpected turnout of over 600K in the unofficial primaries held by the pro-democracy camp sparked concerns from the Hong Kong government that pro-democracy winners from the LegCo elections might veto the 2021 Budget (Ramzy, Yu, and May 2020).

Many have suspected this was the real reason behind the government's cancellation of the LegCo elections in September. This means even if the "subconscious" motive behind young voters' grievances is economic, local governors/ LegCo lawmakers are unlikely to comply before the government addresses at least voters' protest-related demands.

At the same time the rhetoric that economic grievances cannot be addressed without democracy has become increasingly popular among the young middle class. This goes back to the entrenchment of cronyism in Hong Kong. The Land Justice League (LJL), a young activist group founded after the conservation campaigns in the late 2010s, has a strong platform against business-government collusion and real estate hegemony (Land Justice League n.d.). They reject the top-down approach of urban planning which lacks consultation with locals, and argue that planning must be democratized. The undertone of Hong Kong's new-left localism, of which LJL is a member, is that redistribution is not possible if a government answers to businesses rather than the people. Hong Kong's case can therefore be analysed in a class struggle framework where the middle class's interests have been compromised by government's proximity with the capitalist class.

Lastly, the analysis suggests that the voters' discontentment has a spatial component that cannot be ignored. Voters' support for pro-democracy candidates is significantly impacted by the movement organization and protest events in their own district. It is therefore worth looking into districts that have overwhelmingly voted for pro-democracy/ localist candidates. For instance, a policymaker can look into the alleged problem of "rural triads" in New Territories West, or invest efforts in a "peace process" in Tai Po where the besiege of CUHK has traumatized and enraged local voters.

This analysis is preliminary and much future work remains to be done to understand the anti-government sentiment in Hong Kong. More polls and surveys need to be gathered to understand what the majority of pro-democracy voters want. I argue that the DC elections result reflects the discontentment of a young middle class, but housing-related variables and individual data would be needed to understand their frustration, and whether the source of frustration has changed. It is also important to empirically assess the effect of post-materialism on pro-democracy support, so as to avoid a misled emphasis on economic solutions (Sing 2010).

VII. CONCLUSION

At the heart of the unilinear view is the belief that development is incompatible with an undemocratic society. Ironically, despite being the world's freest economy for more than two decades, Hong Kong citizens have little freedom to choose their leader. According to the contingent view, this arrangement would work as long as middle class's interests are protected by the regime, as it is the case in colonial Hong Kong and many other Asian countries. Runaway property prices and entrenched cronyism, however, have increasingly alienated a young middle class whose inability to afford housing has widened their wealth gap with homeowners and the capitalist class. Economists might think it is too much of a coincidence that the protest erupted in a year when housing unaffordability reached a historical high globally (Demographia 2019). To say the anti-extradition bill movement was a channeling of housing dissatisfaction, while potentially correct, does not undermine the case for democracy given Hong Kong's long-term lack of market intervention and business favouritism has produced the most unequal economy in the developed world. The business-friendly arrangement will continue as long as the government is not penalized by popular vote, since they must co-opt powerful businesses to stabilize an undemocratic government.

The results of a multivariate analysis on the 2019 DC elections provide some support to the view that housing prices are a source of anti-government sentiments, as the positive effect of young voters is only significant in middle-class constituencies where young professionals are frustrated with an inability to obtain both private and public housing. Nonetheless, the results also point to the appeal of post-materialism since an united front across age is observed in localist constituencies where justice is a popular demand. That inequality has been a problem in the past two decades but only sparked a large-scale movement in 2019 seems implausible. The perceived threat of freedom of speech by the extradition bill is palpable in protest slogans and public polls (HKU Public Opinion Programme 2019).

The dissatisfaction with the government, while obvious, does not mean the democratic movement faces no hurdle. One divide shown in the empirical analysis is between the new middle-aged voters and the rest of the middle class. At the same time, the DC elections did not show an increase in the city's support for democracy as the popular vote for the pro-democracy camp remains around 60%. A China-induced landslide victory for the pro-democracy camp is not unseen in Hong Kong's history. Martin Lee's United Democrats won at least 4 times as many seats as another other party in the 1991 LegCo elections in the aftermath of the 1989 Tiananmen crackdown (Z. Liu and Lei 1993). Notwithstanding 6 years later, Hong Kong was still handed back to China without any democratic transform.

The NSL can also sap the energy of the democratic movement. While Hong Kong's streets are undeniably quieter compared to last summer, the 600K turnout in the unofficial pro-democracy primaries, as well as the stock rally (Shane n.d.) and surge in newspaper purchase in solidarity with the arrested media tycoon Jimmy Lai since the passing of the NSL have shown that protesters are still finding ways to voice their dissent wherever

possible.

Hong Kong's case is a test of the contingent view that explains the persistence of non-democratic systems in late-developing territories. If the Hong Kong government manages to address the middle class's economic grievances while social unrest is suppressed by fear, will the democratic movement recede and the middle class once again become the government's aide to suppress democracy? Or is democracy inevitable as a post-materialist ideal of a post-modern society? Much uncertainty lies ahead.

A. ADDITIONAL ANALYSES

1. IS THIS REALLY A POLITICIZED ELECTION?

To test the null hypothesis that pro-establishment candidates' poor electoral performance is due to their poor work performance as incumbent district councilors, I ran a candidate-level regression with the variable *newcomer*. These are candidates with zero political experience but ran their platform on anti-extradition bill and the five demands. The dependent variable is individual vote share. Models (2) - (4) are run with district fixed effects and standard errors clustered at district level.

Table A.1: OLS regression to examine whether this election has been politicized

	(1) voteshare	(2) voteshare	(3) voteshare	(4) voteshare
newcomer	0.149*** (0.0179)	0.127*** (0.0152)	-0.00342 (0.0142)	-0.0113 (0.0155)
pro-democracy			0.200*** (0.0125)	0.215*** (0.0163)
male	0.00845 (0.0134)	0.0183 (0.0111)	0.00884 (0.0123)	0.00940 (0.0123)
incumbent	0.149*** (0.0123)	0.120*** (0.0158)	0.128*** (0.0124)	0.150*** (0.0150)
interaction: pro-democracy incumbent				-0.0512*** (0.0174)
constant	0.349*** (0.0126)	0.546*** (0.0860)	0.528*** (0.0830)	0.528*** (0.0798)
constituency controls		✓	✓	✓
R-squared	0.144	0.300	0.527	0.529
Residual deg. of freedom	1092	17	17	17
N. of obs	1096	1096	1096	1096
Standard errors	ols	cluster	cluster	cluster

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

The fact that *incumbent* is positive and significant across all specifications suggests that incumbent councilors, regardless of political affiliation, have been rewarded for their work over the past 4 years. At the same time, being a *newcomer* with no track record in community service also has a positive correlation with vote share (models (1) and (2)). It is interesting, if not contradictory, how some voters want a rookie politician to deal with community affairs given an incumbent is not unpopular. When newcomers'

pro-democracy stance in accounted for in model (3), the effect of *newcomer* disappears. This suggests while some voters still reward incumbents for their work, many treated their ballot as a protest vote. Newbies are not evaluated by their experience but by their political affiliation. Model (4) provides more evidence to reject the null hypothesis that pro-establishment incumbents are worse at community work. When *pro – democracy* is interacted with *incumbent*, the coefficient is -0.0512 and significant at 1% level. This suggests pro-democracy incumbents might have actually performed worse in the past 4 years and get penalized for it. This is in line with observations that pro-democracy councilors often provide less welfare for local voters than pro-establishment councilors who have resource support from the Liaison Office or pro-Beijing businessmen (N. Ma 2017, J. Y. S. Cheng 2007).

Even if some voters still vote based on past performance of the incumbent councilors, the protest vote clearly dominates as seats have disproportionately been won by the pro-democracy camp whose incumbents lack favourable ex-post evaluation.

2. DID TEARGAS HELP FLIP THE CONSTITUENCIES FROM BLUE TO YELLOW?

To test the null hypothesis that teargas has no effect on constituencies switching from pro-establishment to pro-democracy, I run a logistic regression only on the constituencies that flipped from pro-establishment to pro-democracy. The dependent variable takes on a value of 1 if they have elected a pro-democracy candidate this year. There are 308 constituencies that had a pro-establishment councilor since last DC elections. It is a highly unbalanced panel with only 55 constituencies remain pro-establishment.

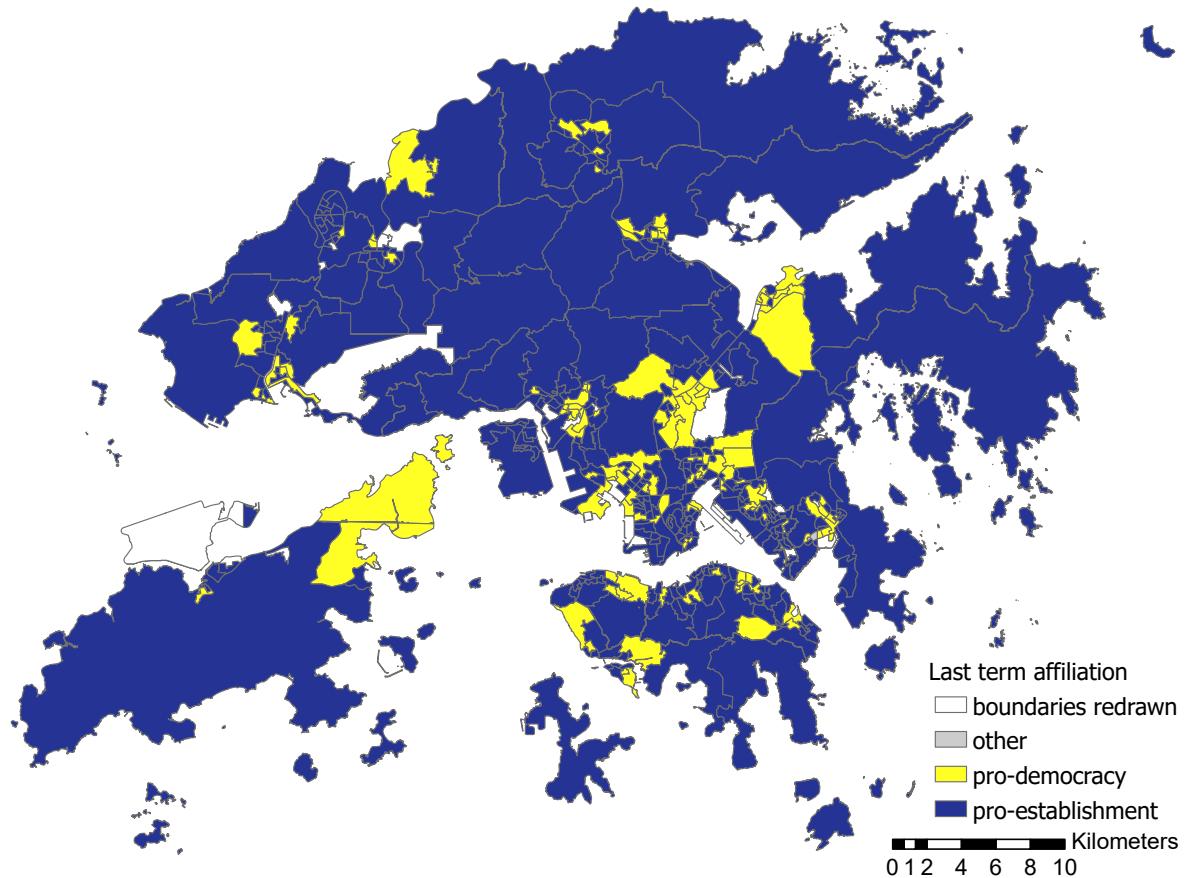


Figure A.1: 2015 DC outcomes drawn on 2019 boundaries

Observations which were teargassed the most were dropped because they have all elected a pro-democracy councilor this term. When district fixed effects are included, more observations are dropped because there are two districts (Wong Tai Sin and Tai Po) whose constituencies have all elected pro-democracy candidates.

Table A.2 does not give a conclusive effect of teargas use on support for pro-democracy candidates. There are two possible explanations: 1) the unreliability of statistics/ input error: although I cross-checked the police-reported numbers with news sources and used intervals instead of absolute numbers, averaging the teargas canisters by number of places can still be problematic. For instance, the streets around government headquarters are heavily teargassed each time it appears on the news. But I only assign it an average of that day's teargas total. The accumulation of underestimation might put a constituency into a wrong teargas interval 2) teargas has a polarizing effect as it can both cast police as violent and protesters as troublemakers. This might actually mobilize voters from both pro-democracy and pro-establishment camps to express their irritation with the other side.

Table A.2: Logistic regression only on constituencies that flipped from blue to yellow

	Fixed-effect			SE-clustered	
	(1) affiliation_19	(2) affiliation_19	(3) affiliation_19	(4) affiliation_19	(5) affiliation_19
tginterval1	-0.171 (0.839)	0.163 (1.210)	0.437 (1.176)	-0.294 (0.998)	-0.214 (0.992)
tginterval2	0.155 (0.365)	-0.253 (0.746)	0.102 (0.681)	-0.00500 (0.496)	0.226 (0.503)
tginterval3	1.352** (0.553)	0.686 (0.750)	1.134 (0.719)	1.223* (0.666)	1.266* (0.660)
tginterval4	0.676 (0.780)	1.580 (1.487)	1.011 (1.232)	1.999 (1.255)	0.978 (1.013)
tginterval5	0 (.)	11.66 (1360.8)	13.32 (1075.1)	0 (.)	0 (.)
young_new		68.96** (30.49)		69.25** (27.88)	
middleaged_new		-139.2*** (35.55)		-141.1*** (31.82)	
young			7.152 (6.511)		11.73** (5.218)
middleaged			5.534 (5.534)		-5.861 (4.735)
constituency controls		✓	✓	✓	✓
constant	1.269*** (0.194)			2.670 (4.571)	0.156 (4.375)
N. of obs	305	260	260	305	305

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

3. ROBUSTNESS CHECK FOR THE MIDDLE-CLASS DEFINITION

The cut-offs for middle class is slightly adjusted to see if the coefficients change drastically.

Table A.3: Regression on constituencies subsetted by income, different cut-offs

	Low-income (<=20K)		Middle-income (<=40K)		High-income (>40K)	
	(1) demvoteshare	(2) demvoteshare	(3) demvoteshare	(4) demvoteshare	(5) demvoteshare	(6) demvoteshare
young_new	1.491 (1.072)		1.701*** (0.363)		-1.988 (2.017)	
middleaged_new	-2.208* (1.054)		-2.746*** (0.487)		3.917*** (1.237)	
young		0.303 (0.194)		0.307** (0.138)		-0.721** (0.299)
middleaged		-0.285 (0.204)		-0.0296 (0.145)		0.374 (0.275)
tginterval1	-0.0440 (0.0507)	-0.0414 (0.0636)	-0.0283 (0.0232)	-0.0272 (0.0234)	-0.0733** (0.0287)	-0.0815** (0.0295)
tginterval2	-0.00425 (0.0195)	-0.00240 (0.0205)	-0.0261*** (0.00852)	-0.0256** (0.0113)	0.0205 (0.0235)	0.0210 (0.0300)
tginterval3	-0.0109 (0.00874)	-0.00603 (0.00898)	0.0104 (0.00718)	0.00646 (0.00767)	-0.0180 (0.0438)	-0.0166 (0.0408)
tginterval4	-0.0159 (0.0382)	-0.0259 (0.0424)	-0.0241* (0.0129)	-0.0241** (0.0102)	-0.0259 (0.0741)	-0.0742 (0.0753)
lennon	-0.00232 (0.0152)	0.000597 (0.0126)	0.00704 (0.00447)	0.00330 (0.00429)	0.0265** (0.0116)	0.0282* (0.0136)
retail	0.860 (0.681)	0.366 (0.777)	0.297 (0.321)	0.278 (0.375)	-1.237 (0.882)	-0.982 (0.982)
admin	1.423** (0.627)	1.405** (0.573)	-0.114 (0.439)	0.0223 (0.321)	2.798*** (0.792)	2.666*** (0.781)
postsec	-0.179 (0.364)	-0.0687 (0.391)	0.141 (0.0974)	0.103 (0.123)	-0.656** (0.243)	-0.651* (0.346)
lnpopdensity	0.00588 (0.00437)	0.00448 (0.00428)	0.0172*** (0.00311)	0.0194*** (0.00375)	0.0177** (0.00737)	0.0184*** (0.00544)
turnout	0.00186 (0.217)	-0.124 (0.252)	-0.0205 (0.140)	-0.0472 (0.173)	-0.240 (0.326)	-0.405 (0.335)
totalcand	-0.0120 (0.0133)	-0.0135 (0.0143)	-0.00532 (0.00488)	-0.00653 (0.00415)	-0.0334* (0.0163)	-0.0378** (0.0164)
bluestreak	-0.0213 (0.0160)	-0.0158 (0.0174)	-0.0124** (0.00516)	-0.00699 (0.00654)	-0.0198 (0.0166)	-0.0201 (0.0189)
tginterval5			-0.0221 (0.0297)	-0.00106 (0.0296)	-0.0361 (0.0429)	-0.0521 (0.0420)
constant	0.380** (0.156)	0.523** (0.208)	0.348*** (0.0885)	0.276** (0.105)	0.769*** (0.259)	0.947*** (0.290)
R-squared	0.220	0.176	0.382	0.312	0.412	0.441
Residual deg. of freedom	15	15	17	17	15	15
N. of obs	126	126	247	247	79	79

Standard errors in parentheses

 * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

B. SUPPLEMENTARY DIAGRAMS/ FIGURES



Figure B.1: Vandalism at Best Mart 360, a shop accused by protesters to be linked to the triad members who attacked protesters at the Yuen Long event (Liang 2019)



Figure B.2: A tunnel at Tai Po Market station turned into a lennon wall (Wikiwand n.d.)



Figure B.3: A protest poster for Wong Tai Sin, a district where the pro-democracy camp won all the constituencies. The statue on the poster is a Taoist deity after which the district is named after. Wong Tai Sin is wearing a teargas mask here.



Figure B.4: A caricature of the Yuen Long attack. "Please mind the thug" is a word play on "Please mind the gap" which is often broadcasted inside Hong Kong metro stations



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Figure B.5: The LIHKG pig is a mascot from LIHKG, an online forum preferred by protesters to communicate. Here it is representing the Big Buddha on Lantau Island.

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