Ghosts of the Black Decade: How legacies of violence shaped Algeria's Hirak protests

Online Appendix

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A Predictors of mass killings

To shed light on why some *wilayat* experienced more mass killings in the 1990s than others, we examine whether killings correlate with a variety of census and electoral data. We include measures for the FIS's vote share in the 1991 elections, the population (logged), the percent single, percent illiterate, percent university educated, and the percent of the country's industrial, construction, service, and administrative entities located in that *wilaya*. Figure A.1 shows that for either the logged number of mass killings or deaths per capita, FIS vote share emerges as the only significant predictor. We accordingly control for FIS vote share in all regression models.

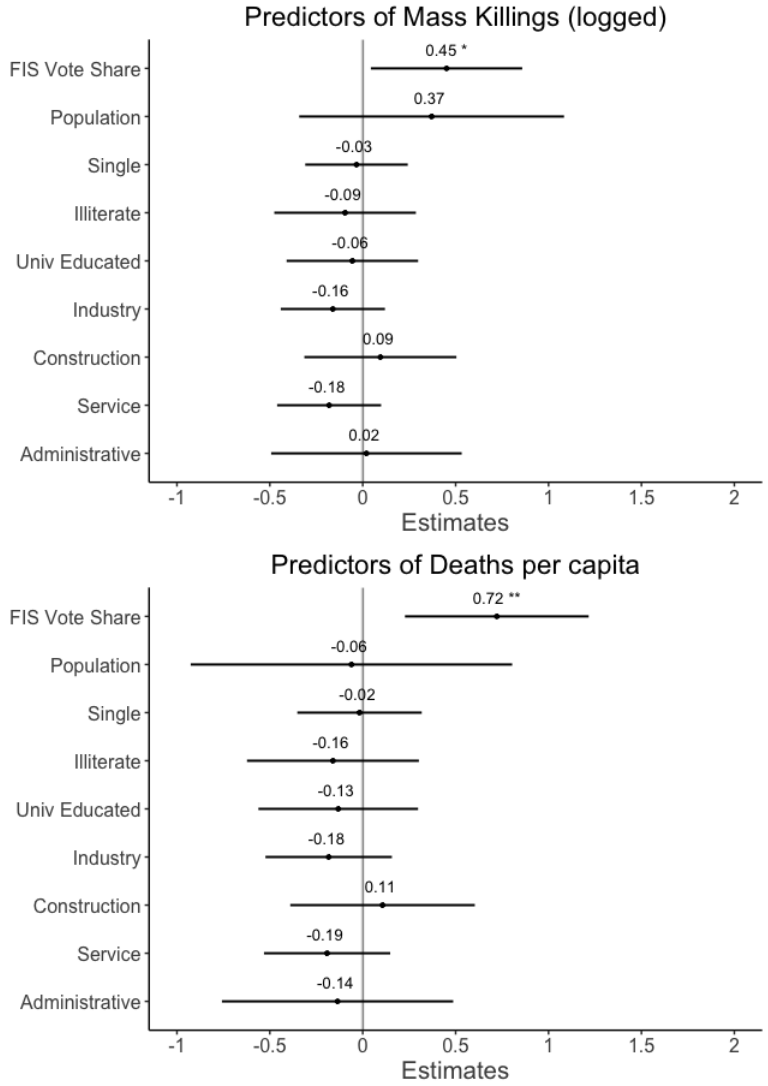


Figure A.1. Predictors of Mass Killings (logged) and Deaths per capita

B Algerian transition survey

B.1 Survey recruitment

The survey in Algeria was fielded on a rolling basis between 1 April 2019 and 21 February 2020. Respondents were recruited into the survey through advertisements on Facebook that were shown to all 19 million adult Algerian Facebook users. The Facebook advertisement (Figure A.2) featured a picture of the Algerian flag with the title: "Algeria Politics Survey." The text says "Take this academic survey from Princeton University about Algerian politics." Clicking the advertisement took users out of Facebook and into Qualtrics, a survey platform. Once in Qualtrics, respondents were presented with a consent form, and then allowed to proceed to the survey.

Figure A.2. Facebook advertisement

Our motivation for recruiting respondents through Facebook, rather than face-to-face, was driven by ethical considerations. When Algeria's protests erupted in February 2019 and we began to consider survey options, we learned that the partner of the most recent Arab Barometer survey, conducted right before the protests, was placed under house arrest. We accordingly decided not to place any enumerator or survey team at risk by instead pursuing an online approach that we could implement ourselves.

Yet while online surveys eliminate risks for enumerators, there may still be risk for respondents. Algerians have, for instance, been prosecuted for Facebook posts deemed critical of the regime. However, our survey does not involve any respondent posting anything on Facebook: just to click on a Facebook advertisement and then fill out an anonymous survey in Qualtrics. Replication files, once posted, would likewise not contain any personally identifying information that the regime could use to prosecute individuals. Any risks to respondents from the regime, therefore, are minimal.

There are also important ethical considerations regarding the data Facebook collects on its users. However, since our survey was conducted on Qualtrics, not Facebook, all Facebook learns is whether a user clicked on an advertisement: not their answers to the survey. Likewise, Qualtrics does not gain access to a user's Facebook profile and only records which advertisement brought them to the survey.

B.2 Survey procedure

Once in Qualtrics, users could choose to take the survey in Arabic, French, or English. Over 93% chose to take the survey in Arabic, with the remainder in French. In the interests of transparency, a banner featuring the Princeton University Qualtrics logo headed every page.

Figure A.3. First page of Qualtrics survey

On the first page, respondents answered three eligibility questions (age over 18, Algerian nationality, and currently living in Algeria). We later verified that they were living in Algeria using the geolocation of IP addresses; we exclude any survey completed outside of Algeria. After answering the eligibility questions, eligible users then proceeded to the consent form, which described all risks and benefits to the users. If they clicked agree, they could proceed to the survey, knowing they could terminate the survey at any time. The survey itself featured nearly 100 questions, including demographics, attitudes toward the protests, attitudes toward the military and toward democracy, and intended voting behavior. The questionnaire featured randomization in question order as well as answer order.

To incentivize Algerians to complete the entire survey, we offered cell phone credit as a reward for completion. In the consent form, respondents were informed that if they completed the survey, they would receive 100DZD (<$1) of mobile phone credit. At the end of the survey, respondents who wished to claim their reward were taken to a separate platform, a Google form, where they could enter their mobile phone number separate from their survey answers. We subsequently sent phone credit remotely using the Swiss company CY.SEND, which partners with the three largest mobile phone companies in Algeria: Mobilis, Djezzy, and Ooredoo. In total, only one-third of survey takers chose to enter their phone numbers and receive credit.

B.3 Representativeness

Cognizant of the biases in an online, Facebook population, we followed **?** in setting age and gender quotas to attempt to generate a more representative sample. We created multiple advertisements (each with the same ad) and targeted each to a specific age-gender group: Algerian women aged 35-44, for instance. We then altered how much we would spend on each advertisement each day (the "quota"): we set the minimum, $1/day, for groups over-

represented on Facebook, such as men aged 18-24 and 25-34. We spent progressively larger amounts on under-represented groups, up to $10/day on Algerian women over 65 years old. The amount spent affects how long each day the ad would be shown to the targeted demographic.

These quotas created a slightly more balanced sample. Table A.1 presents the age and gender demographics for the overall Algerian population (from the 2015 census), for the total Algerian Facebook population (from April 2019), and for our survey sample (2019-2020). The table suggests that although Algerians on Facebook tend to skew younger and more male, our quotas slightly countered these biases. About 48% of our survey sample was female, compared to 36% of the overall Algerian Facebook population. About 71% of our sample were under 35, compared to 76% of the Facebook population.

Table A.1. Representativeness of Algeria Survey Sample

	Census 2015		**Facebook Population**		**Survey Sample**	
Age	*Men*	*Women*	*Men*	*Women*	*Men*	*Women*
0-17	14.8	14.0	3.8	3.7	0	0
18-24	8.5	8.2	18.0	13.2	17.3	18.5
25-34	9.4	9.2	24.9	12.7	18.9	16.9
35-44	6.9	6.9	10.6	3.9	10.2	8.3
45-54	4.9	4.9	4.1	1.5	4.0	3.3
55-64	3.3	3.2	1.5	0.5	1.7	0.1
65+	2.9	3.0	1.1	0.5	0.2	0.01
Total	**50.6**	**49.4**	**64**	**36**	**52.2**	**47.8**

B.4 Verification and validation

We perform a series of checks to verify that respondents are indeed Algerians living in Algeria and taking the survey seriously. First, the geo-coordinates linked to IP addresses reveal the rough location of survey respondents (country and city, nothing that compromises anonymity). We filtered out the few respondents who took the survey outside of Algeria:

Second, Qualtrics prevents the same IP address from taking the survey more than once, and we can verify that there are no duplicate IP addresses. In addition, we can verify that there are no duplicate phone numbers. Both tests suggest that survey respondents did not attempt to take the survey multiple times to maximize phone credit.

Third, we can examine respondents' time to completion, to verify that respondents were taking the survey seriously, and were not zipping through the survey to receive phone credit. Our median time to completion was 24 minutes (see Figure A.5a), with only 4% completing the survey in less than 10 minutes.

Finally, following Kuriakose & Robbins (2016), we test for duplicate and near-duplicate surveys, which might indicate the same individual attempting to take the survey more than once. However, we had no perfect duplicates, and only 2% of the surveys were even 85% the same (Figure A.5b).[1]

[1]R code to detect duplicates obtained from https://github.com/andrewflowers/survey-fraud/blob/

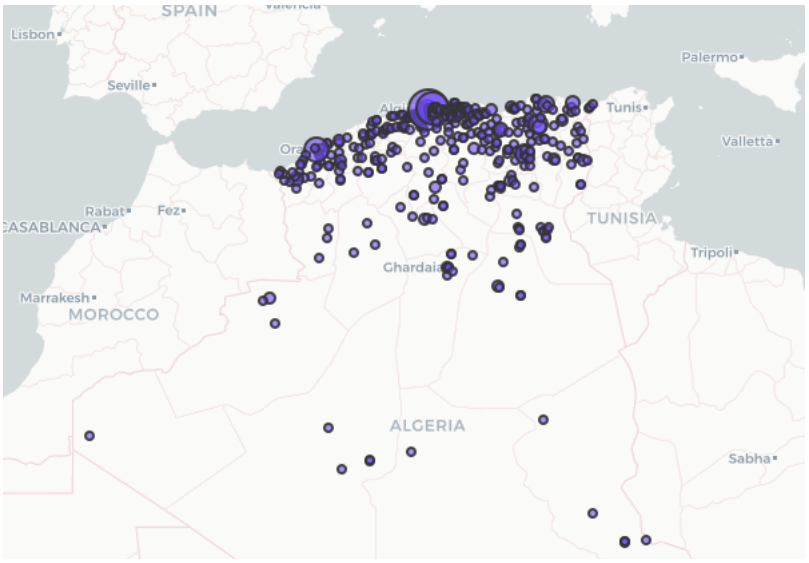


Figure A.4. Map of Survey Respondents

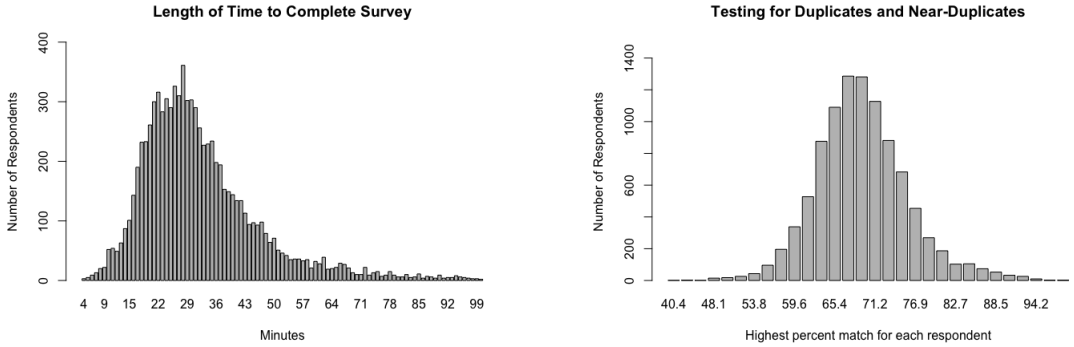


Figure A.5. Verification Checks: (a) Time to Completion and (b) Duplicates

B.5 Demographics over time

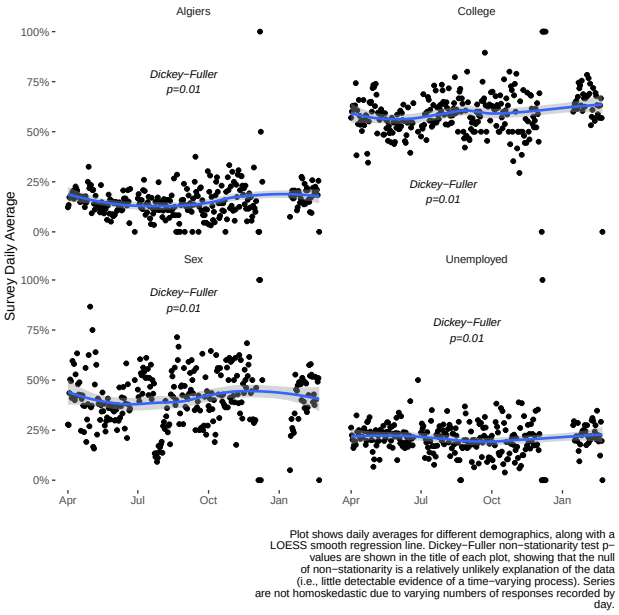
Table A.2 shows the number of respondents surveyed each month. Figure A.6 shows that key demographics are stable over time, with Dickey-Fuller tests rejecting non-stationarity, or the presence of time-varying processes in the proportion recruited by day. In other words, while the exact proportion recruited on a given day shows sampling error, the probability of selection for unemployment, college education, sex and residence in Algiers appears to be constant over time.

master/r_scripts/percentmatch.R.

Table A.2. **Distribution of Respondents over Time**

Month	**Respondents (N)**
April	5657
May	2796
June	1352
July	2180
August	1080
September	789
October	728
November	666
December	39
January	2010
February	1381

Figure A.6. Stability of Sample Selection Over Time by Key Demographics



B.6 Questionnaire

Table A.3. **Survey Questions Used in the Analysis**

Variable	Wording
Protest Participation	Have you personally participated in any of the protests since February 22? (Five-point scale)
Protest Last Month	Have you protested in the last month? (yes / no)
Protest Intentions	How likely are you to protest in the coming days? (Very likely to very unlikely)
Expectations of Repression	Suppose, hypothetically, that military personnel are ordered to repress the protesters. How likely would it be for the military to refuse to repress? (Very likely to refuse - Very likely to agree)
Support for Regime	How much do you support the following institutions? The Political System (strongly support - strongly oppose)
Investigations	Would you support or oppose the following actions? Investigations into abuses committed by the military and security forces in the 1990s.
Loss	Did you personally lose a family member or close friend during the violence of the 1990s?
Economic Satisfaction	Generally speaking, how satisfied or dissatisfied are you with the economic situation in the country? (very dissatisfied - very satisfied)
FIS Ban	Do you support or oppose allowing former politicians from the Islamic Salvation Front (FIS) to legally participate in politics under a different organization? (strongly oppose to strongly support)
Support for 1992 Coup	Did you support or oppose the suspension of the legislative elections by the army in 1992? (strongly oppose to strongly support)
Religiosity	How often do you pray?
Support for Sharia	Do you believe that the government and parliament should enact laws in accordance with Islamic law (sharia)? (strongly disagree to strongly agree)
Urban	How would you describe the city or village you live in?
Unemployed	What is your current occupational status?
Education	What is your level of education?
Age	What is your age?
Income	What is the total monthly income for all members of your household?
Amazigh	Which language is your mother tongue? (Arabic/Tamazight/French)
Governorate	Which province do you live in?

Gender	What is your gender? (Male / Female)
Military	Do you have military experience? (Yes / No)
Police	Do you have experience in the police or internal security forces? (Yes / No)
Vote 1991	[If age $>$ 46] Who did you vote for in the 1991 legislative elections? [If age $\leq$ 46] Who would you have voted for in the 1991 legislative elections, if you had been old enough? (FLN / FIS / FFS / MSP / RCD / Ennahda / MDA / Other / Not vote)
Ask Military	Do you expect the regime to ask the military to repress the protests? (Yes / No)
Outcome Civil War	In your opinion, do you think the current uprising will lead to civil war? (yes or no)

C Regression tables and robustness checks

C.1 Main regression tables

Table A.4 provides the main analysis from which Figure 3 (in text) was created. It shows that massacres have a negative correlation with protest participation, whether measured as a binary variable (Model 1), continuous variable (Model 2), or as their future intentions to protest (Model 3). However, the interaction shows that this negative correlation flips over time, eventually turning into a positive correlation.

Table A.4. Massacres on Protest Participation Over Time

	Dependent variable:		
	Protested (0-1)	Protested (1-5)	Will Protest (1-4)
	(1)	(2)	(3)
Massacres (log)	-0.005^{*} (0.002)	-0.02^{***} (0.01)	-0.02^{***} (0.01)
Weeks Since	0.0003 (0.0003)	0.005^{***} (0.001)	-0.02^{***} (0.001)
Massacres (log)*Weeks Since	0.0002^{**} (0.0001)	0.001^{**} (0.0003)	0.001^{***} (0.0002)
Targeted Attacks (pct)	0.004 (0.01)	0.04 (0.03)	-0.02 (0.03)
Age	-0.04^{***} (0.002)	-0.10^{***} (0.01)	-0.03^{***} (0.01)
Female	-0.22^{***} (0.01)	-0.80^{***} (0.02)	-0.14^{***} (0.02)
Education	0.01^{***} (0.004)	0.05^{***} (0.01)	-0.002 (0.01)
Income	0.01^{***} (0.002)	0.02^{***} (0.005)	0.01^{**} (0.004)
Unemployed	-0.06^{***} (0.01)	-0.10^{***} (0.03)	-0.01 (0.02)
Military	-0.01 (0.01)	0.04 (0.03)	-0.02 (0.02)
Police	0.01 (0.01)	0.10^{***} (0.04)	0.06^{**} (0.03)
Urban	0.07^{***} (0.01)	0.24^{***} (0.02)	0.06^{***} (0.02)
Amazigh	0.08^{***} (0.01)	0.38^{***} (0.04)	0.35^{***} (0.03)
Prayer	-0.01^{***} (0.004)	-0.03^{***} (0.01)	-0.002 (0.01)
Sharia	-0.02^{***} (0.003)	-0.08^{***} (0.01)	-0.08^{***} (0.01)
FIS Vote 1991	-0.09^{**} (0.04)	-0.17 (0.13)	-0.23^{**} (0.10)
Support FIS Ban	0.01^{***} (0.003)	0.07^{***} (0.01)	0.12^{***} (0.01)
Support 1992 Coup	-0.05^{***} (0.004)	-0.19^{***} (0.01)	-0.13^{***} (0.01)
Economy Good	-0.07^{***} (0.004)	-0.19^{***} (0.01)	-0.31^{***} (0.01)
April 1	-0.03^{*} (0.02)	-0.22^{***} (0.05)	0.14^{***} (0.04)
Associations	-0.001 (0.002)	-0.003 (0.01)	0.0005 (0.01)
Constant	1.11^{***} (0.04)	3.79^{***} (0.12)	3.90^{***} (0.10)
Observations	16,694	16,694	16,693
R^2	0.10	0.14	0.19
Adjusted R^2	0.10	0.14	0.19

Note: $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

Table A.5 shows the regressions from which Figure 4 (in text) was created. Model 1 shows that respondents in areas with more massacres were less likely to say they have protested during the *Hirak*, among those who answered between April-August 2019. Model 2 then shows protest longevity, examining among those in September 2019-February 2020 whether they have protested in the last month.

Table A.5. Effect of Massacres on Protest Onset and Longevity

	Dependent variable (0-1):	
	Protested in *Hirak* April-August 2019	Protested in last month Sept 2019-Feb 2020
	(1)	(2)
Massacres (log)	-0.004^{*} (0.002)	0.01^{**} (0.003)
Targeted Attacks (pct)	0.01 (0.01)	-0.02 (0.02)
Age	-0.04^{***} (0.003)	-0.002 (0.004)
Female	-0.22^{***} (0.01)	-0.06^{***} (0.01)
Education	0.02^{***} (0.004)	-0.01 (0.01)
Income	0.01^{***} (0.002)	0.01^{**} (0.002)
Unemployed	-0.08^{***} (0.01)	0.02 (0.01)
Military	-0.01 (0.01)	0.01 (0.02)
Police	0.01 (0.01)	0.02 (0.02)
Urban	0.07^{***} (0.01)	0.02^{*} (0.01)
Amazigh	0.07^{***} (0.01)	0.22^{***} (0.02)
Prayer	-0.01^{**} (0.005)	-0.01 (0.01)
Sharia	-0.02^{***} (0.004)	-0.04^{***} (0.005)
FIS Vote 1991	-0.06 (0.05)	-0.21^{***} (0.06)
Support FIS Ban	0.01^{*} (0.004)	0.05^{***} (0.005)
Support 1992 Coup	-0.05^{***} (0.005)	-0.03^{***} (0.01)
Economy Good	-0.07^{***} (0.01)	-0.06^{***} (0.01)
April 1	-0.03^{*} (0.02)	
Associations	-0.003 (0.003)	-0.002 (0.003)
Weeks Since	0.001 (0.001)	-0.002^{**} (0.001)
Constant	1.09^{***} (0.05)	0.58^{***} (0.07)
Observations	11,505	4,371
R^2	0.10	0.15
Adjusted R^2	0.10	0.14

Note: $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

C.2 Alternative independent variables

Table A.6 shows that results are robust to using the alternative measure of massacre severity: deaths per 1000 residents. As seen in Figure A.7, the deaths per capita are distributed across Algerian *wilayat* in a similar fashion as the massacres (correlation is 0.87). Using this variable as an alternative to massacres, Model 1 in Table A.6 shows that in the early phase of the protests, deaths per capita negatively correlate with protest onset. Model 2 uses protest intentions, and shows the significant interaction with time, with the sign on deaths per capita flipping from negative to positive.

Figure A.7. Distribution of Massacres across Algerian *Wilayat* (Deaths per 1000)

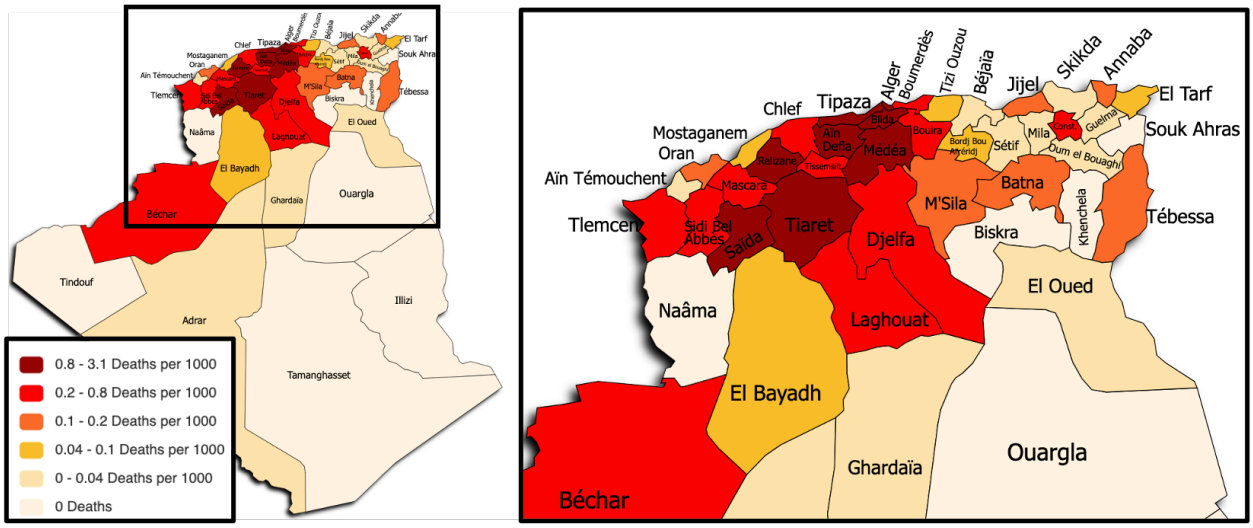


Table A.6. Robustness Check: Deaths per capita

	Dependent variable:	
	Protested in *Hirak* (0-1)	Protest Intentions (1-4)
	April-August 2019	Full Sample
	(1)	(2)
Deaths per 1000	-0.02^{***} (0.01)	-0.05^{***} (0.02)
Weeks Since	0.001 (0.001)	-0.02^{***} (0.001)
Deaths*Weeks Since		0.002^{*} (0.001)
Targeted Attacks (pct)	0.004 (0.01)	-0.03 (0.03)
Age	-0.04^{***} (0.003)	-0.03^{***} (0.01)
Female	-0.22^{***} (0.01)	-0.14^{***} (0.02)
Education	0.02^{***} (0.004)	-0.002 (0.01)
Income	0.01^{***} (0.002)	0.01^{**} (0.004)
Unemployed	-0.08^{***} (0.01)	-0.01 (0.02)
Military	-0.01 (0.01)	-0.02 (0.02)
Police	0.02 (0.01)	0.06^{**} (0.03)
Urban	0.07^{***} (0.01)	0.06^{***} (0.02)
Amazigh	0.07^{***} (0.01)	0.35^{***} (0.03)
Prayer	-0.01^{**} (0.005)	-0.002 (0.01)
Sharia	-0.02^{***} (0.004)	-0.08^{***} (0.01)
FIS Vote 1991	-0.06 (0.05)	-0.24^{**} (0.09)
Support FIS Ban	0.01^{*} (0.004)	0.12^{***} (0.01)
Support 1992 Coup	-0.05^{***} (0.005)	-0.13^{***} (0.01)
Economy Good	-0.07^{***} (0.01)	-0.31^{***} (0.01)
April 1	-0.03^{*} (0.02)	0.14^{***} (0.04)
Associations	-0.004 (0.003)	-0.0001 (0.01)
Constant	1.10^{***} (0.05)	3.92^{***} (0.09)
Observations	11,505	16,693
R^2	0.10	0.19
Adjusted R^2	0.10	0.19

Note: $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

The perpetrators of most of the massacres in the dataset were unknown. As a robustness check, we code the proportion of massacres in a *wilaya* attributed to the government. Table A.7, Model 1 shows that government massacres likewise exhibit an interaction with time, at first negatively but then positively correlating with intentions to protest. Model 2 then shows that in the later stages of the protests, government massacres exhibit a positive correlation with respondents having protested in the last month.

Table A.7. Robustness Check: Government Massacres

	Dependent variable:	
	Protest Intentions (1-4)	Protested Last Month (0-1)
	Full Sample	Sept 2019-Feb 2020
	(1)	(2)
Government Massacres	-0.21^{**} (0.10)	0.12^{***} (0.04)
Weeks Since	-0.02^{***} (0.001)	-0.002^{**} (0.001)
Government Massacres*Weeks Since	0.01^{***} (0.004)	
Targeted Attacks (pct)	-0.05 (0.04)	-0.03 (0.02)
Age	-0.02^{***} (0.01)	0.0001 (0.004)
Female	-0.15^{***} (0.02)	-0.08^{***} (0.01)
Education	0.0001 (0.01)	-0.01^{*} (0.01)
Income	0.01^{**} (0.005)	0.01^{**} (0.003)
Unemployed	-0.003 (0.02)	0.01 (0.01)
Military	-0.02 (0.03)	0.01 (0.02)
Police	0.04 (0.03)	0.01 (0.02)
Urban	0.06^{***} (0.02)	0.03^{***} (0.01)
Amazigh	0.33^{***} (0.03)	0.20^{***} (0.02)
Prayer	-0.0004 (0.01)	-0.002 (0.01)
Sharia	-0.08^{***} (0.01)	-0.04^{***} (0.01)
FIS Vote 1991	-0.31^{***} (0.10)	-0.18^{***} (0.06)
Support FIS Ban	0.12^{***} (0.01)	0.05^{***} (0.01)
Support 1992 Coup	-0.12^{***} (0.01)	-0.02^{***} (0.01)
Economy Good	-0.32^{***} (0.01)	-0.06^{***} (0.01)
April 1	0.15^{***} (0.05)	
Associations	0.02^{**} (0.01)	0.005 (0.01)
Constant	3.86^{***} (0.11)	0.54^{***} (0.08)
Observations	13,087	3,509
R^2	0.19	0.16
Adjusted R^2	0.19	0.15

Note: $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

C.3 Mechanisms

Table A.8, from which we create Figure 5 (in text), shows the correlation between massacres and the four mechanisms: expectations of repression (Model 1), opposition towards the regime (Model 2), desire to investigate military/security force abuses in the civil war (Model 3), and personally losing someone in the civil war (Model 4).

Table A.8. Massacres on Mechanisms

	Dependent variable:			
	Exp Repression (1-5)	Oppose Regime (1-5)	Investigate 1990s (1-5)	Personal Loss (1-5)
	(1)	(2)	(3)	(4)
Massacres (log)	0.02*** (0.004)	0.02*** (0.004)	0.02*** (0.01)	0.03*** (0.004)
Targeted Attacks (pct)	−0.02 (0.03)	−0.05** (0.03)	−0.02 (0.03)	−0.04 (0.03)
Age	0.02*** (0.01)	0.003 (0.01)	−0.06*** (0.01)	0.06*** (0.01)
Female	0.04** (0.02)	0.01 (0.02)	0.08*** (0.03)	−0.05** (0.02)
Education	0.002 (0.01)	0.01 (0.01)	−0.03*** (0.01)	−0.02* (0.01)
Income	0.003 (0.004)	0.01*** (0.004)	0.001 (0.01)	−0.0004 (0.004)
Unemployed	0.03 (0.02)	0.02 (0.02)	0.09*** (0.03)	0.002 (0.02)
Military	−0.04 (0.03)	−0.05** (0.02)	−0.19*** (0.03)	0.10*** (0.03)
Police	0.03 (0.03)	−0.10*** (0.03)	−0.07* (0.04)	0.14*** (0.03)
Urban	−0.07*** (0.02)	−0.06*** (0.02)	−0.05* (0.02)	−0.002 (0.02)
Amazigh	0.23*** (0.03)	0.34*** (0.03)	0.09** (0.04)	0.03 (0.03)
Prayer	−0.08*** (0.01)	−0.07*** (0.01)	−0.02* (0.01)	0.01 (0.01)
Sharia	−0.09*** (0.01)	−0.01 (0.01)	0.02** (0.01)	0.005 (0.01)
FIS Vote 1991	0.07 (0.10)	−0.04 (0.10)	−0.44*** (0.13)	−0.08 (0.10)
Support FIS Ban	0.05*** (0.01)	0.06*** (0.01)	0.07*** (0.01)	0.001 (0.01)
Support 1992 Coup	0.02** (0.01)	−0.14*** (0.01)	−0.25*** (0.01)	−0.03*** (0.01)
Economy Good	0.05*** (0.01)	−0.44*** (0.01)	−0.28*** (0.01)	−0.01 (0.01)
Associations	0.01 (0.01)	−0.01 (0.01)	−0.02** (0.01)	−0.01 (0.01)
April 1	0.04 (0.04)	−0.01 (0.04)		
Weeks Since	0.01*** (0.001)	−0.02*** (0.001)	0.01*** (0.001)	0.003 (0.005)
Regime will ask Military	0.60*** (0.02)			
Constant	1.80*** (0.10)	5.33*** (0.09)	5.00*** (0.12)	0.14 (0.23)
Observations	16,693	16,196	12,799	3,028
R^2	0.10	0.23	0.13	0.09
Adjusted R^2	0.10	0.23	0.13	0.09

Note: *p<0.1; **p<0.05; ***p<0.01. Model 1 also controls for a priming experiment.

Table A.9 shows two additional mechanisms in support of hypothesis 1: that areas with more massacres were more likely to expect the regime to ask the military to repress protests, and were more likely to expect the uprising to descend into civil war.

Table A.9. Robustness Check: Additional Mechanisms

	Dependent variable (0-1):	
	Regime will ask Military	Civil War is Likely
	(1)	(2)
Massacres	0.01^{***} (0.002)	0.003^{***} (0.001)
Targeted Attacks (pct)	-0.03^{***} (0.01)	0.004 (0.01)
Age	-0.02^{***} (0.002)	-0.004^{***} (0.001)
Female	0.07^{***} (0.01)	-0.01^{**} (0.004)
Education	-0.01^{***} (0.003)	-0.002 (0.002)
Income	0.001 (0.002)	-0.001 (0.001)
Unemployed	0.02^{**} (0.01)	0.01^{*} (0.005)
Military	-0.02^{*} (0.01)	0.003 (0.01)
Police	0.01 (0.01)	0.03^{***} (0.01)
Urban	-0.01 (0.01)	0.0004 (0.004)
Amazigh	0.08^{***} (0.01)	-0.004 (0.01)
Prayer	-0.02^{***} (0.004)	-0.01^{***} (0.002)
Sharia	-0.01^{***} (0.003)	0.003^{*} (0.002)
FIS Vote 1991	-0.13^{***} (0.04)	-0.07^{***} (0.02)
Support FIS Ban	0.02^{***} (0.003)	-0.01^{***} (0.002)
Support 1992 Coup	-0.03^{***} (0.004)	-0.001 (0.002)
Economy Good	-0.07^{***} (0.004)	0.02^{***} (0.002)
April 1	-0.07^{***} (0.02)	0.02^{**} (0.01)
Associations	-0.001 (0.002)	-0.002^{*} (0.001)
Weeks Since	-0.002^{***} (0.0002)	0.002^{***} (0.0001)
Constant	0.75^{***} (0.04)	0.13^{***} (0.02)
Observations	16,693	16,486
R^2	0.06	0.02
Adjusted R^2	0.06	0.02

Note: $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

C.4 Mediation analyses

Tables A.10, A.11, and A.12 present the mediation analysis for whether respondents have protested at all, intend to protest, and have protested in the last month, respectively. All three show that massacres have a significant mediated effect through expectations of repression for the early protests, and through grievances for the later protests. Figure 6 (in text) is based on Table A.11, Models 1, 4, 5 and 6.

Table A.10. Mediation Analysis: Massacres on Protest Participation

	DV: Have Protested (0-1)					
	Early Protests		Later Protests			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Total Effect	-0.0042^{*}	-0.0044	0.0044	0.0056	$0.0053^{\cdot}$	0.0068
Direct Effect	-0.0035	-0.0042	0.0046	0.0025	0.0042	0.0041
Mediated Effect						
Expectation of Repression	-0.0007^{***}		-0.0001			
Opposition to the Regime		-0.0001		0.0032^{***}		
Investigate abuses from 1990s					0.0011^{***}	
Lost Someone in 1990s						0.0027^{***}
Proportion Mediated	0.162^{*}	0.029	-0.027	0.564	$0.212^{\cdot}$	0.394
Covariates	Yes	Yes	Yes	Yes	Yes	Yes
N	11,503	11,173	5,189	5,021	5,189	3,028

* p<0.05; ** p<0.01; *** p<0.001

Table A.11. Mediation Analysis: Massacres on Protest Intentions

	DV: Protest in the Coming Days					
	Early Protests		Later Protests			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Total Effect	-0.0191^{***}	-0.0183^{***}	0.0095	0.0179^{*}	$0.0164^{\cdot}$	0.0118
Direct Effect	-0.0168^{***}	-0.0178^{***}	0.0098	0.0003	0.0132	0.0065
Mediated Effect						
Expectation of Repression	-0.0024^{***}		-0.0003			
Opposition to the Regime		-0.0004		0.0176^{***}		
Investigate Abuses from 1990s					0.0012^{***}	
Lost Someone in 1990s						0.0053^{***}
Proportion Mediated	0.124^{***}	0.023	-0.031	0.981^{*}	$0.193^{\cdot}$	0.445
Covariates	Yes	Yes	Yes	Yes	Yes	Yes
N	11,503	11,173	5,189	5,021	5,189	3,028

* p<0.05; ** p<0.01; *** p<0.001

Table A.12. Mediation Analysis: Massacres on Protest Resilience

	DV: Protested in Last Month			
	Model 1	Model 2	Model 3	Model 4
Total Effect	0.0050	0.0076***	0.0069***	0.0051*
Direct Effect	0.0050	0.0032	0.0063***	0.0029
Mediated Effect				
Expectation of Repression	−0.0000			
Opposition to the Regime		0.0044***		
Investigate Abuses from 1990s			0.0006***	
Lost Someone in 1990s				0.0022***
Proportion Mediated	0.000	0.576***	0.087***	0.438*
Covariates	Yes	Yes	Yes	Yes
N	3,028	4,238	4,371	3,028

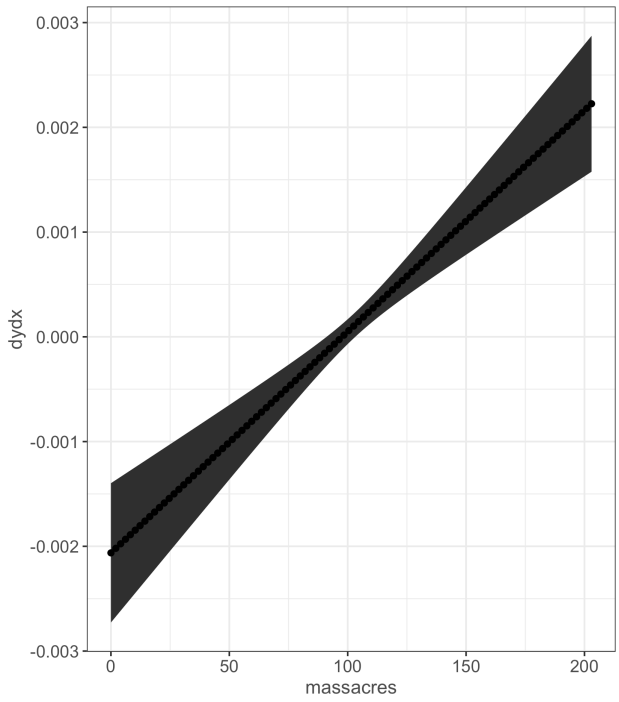
* p<0.05; ** p<0.01; *** p<0.001

D Additional analyses

D.1 Quadratic effects of massacres

A third way of assessing the severity of massacres, beyond the logged number of massacres or the total deaths per capita, it is to calculate a quadratic relationship between the total number of mass killings and protest behavior. To do so, we lump together all surveys from the entire time period, and calculate an interaction between the number of mass killings and its square, with the same set of controls as before. Because the main effect is an interaction, we present the results as a marginal effects plot in Figure A.8.

Figure A.8. Quadratic Effect of Mass Killings on Protest Participation



Similar to the interaction of protests and massacres over time, the plot shows strongly conditional associations. When pooling the data across time, there is a cross-sectional association which suggests that at high levels of massacres, the effect of additional massacres results in increased protest activity, while the opposite holds for districts with low massacres. This association provides further evidence of our theory that massacres appear to affect protest activity through multiple pathways. Cross-sectionally, it would seem that the repression effect dominates where massacres were relatively few and the grievance effect where massacres were relatively high. At some point, the number of massacres will create stronger grievances without resulting in an offsetting level of fear of repression.

D.2 2019 elections

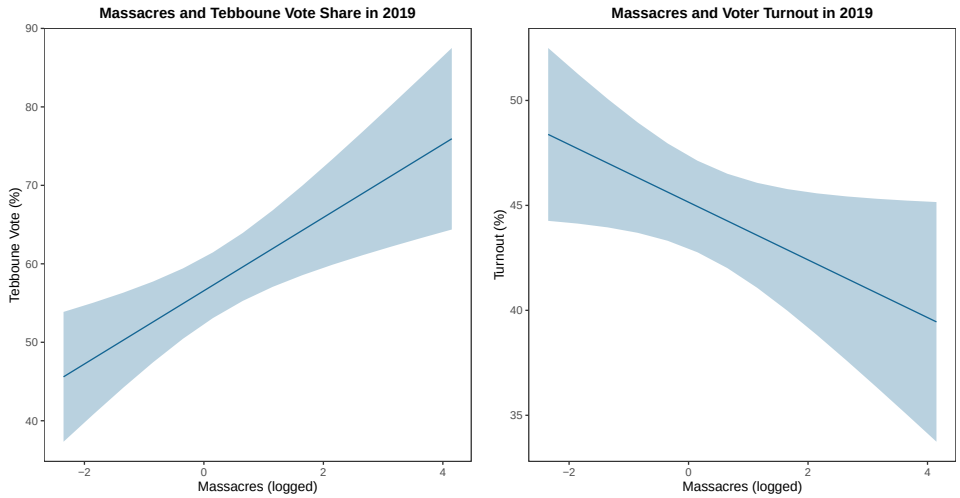
In this final section, we present one non-survey based exploration of our hypotheses: the December 2019 election results. Having begun to repress the protests, the regime embarked on its roadmap, holding presidential elections in December to find a replacement for Bouteflika. The elections were boycotted by the remaining *Hirak* protesters, who wished to see a complete change in the system, not simply a reshuffling of the deck. Indeed, almost all of the candidates permitted to run in the December elections were either regime insiders or co-opted opposition elites, and none came from the *Hirak*.

In these elections, the military's preferred candidate, Abdelmadjid Tebboune, a former prime minister, was elected as president with 58% of the vote. Turnout, however, was a mere 39.9%, having been boycotted by the protesters. The elections therefore did not solve the crisis, and the *Hirak* continued protesting after Tebboune's election.

Our hypotheses suggest that massacres should impact the 2019 elections in two ways. First, in line with Hypothesis 1, high-massacre areas should in general see higher compliance with the regime's roadmap, fearful of repression and retribution otherwise. They should therefore see a higher vote share for the regime's candidate, Tebboune. However, based on Hypothesis 2, high-massacre areas should at this point also see a higher proportion of protesters committed to the *Hirak* and thus ready to boycott the 2019 elections, due to their stronger grievances. In short, massacres should correlate with both a higher vote share for Tebboune but also a higher boycott (lower turnout) in the elections.

Figure A.4 and Table A.13 present the results. The left plot shows that massacres in the 1990s strongly predict Tebboune's vote share. Among those who chose to vote, those living in *wilayat* that experienced high intensity violence were almost twice as likely to vote for Tebboune. However, the right plot shows that these high-violence areas were also more likely to boycott the elections entirely. Though they produced fewer protesters, those protesters remained committed to the *Hirak* as late as December 2019, boycotting the elections at greater rates.

Figure A.9. Predicted Probability of Tebboune Vote Share by Massacres



In this analysis, we include a number of *wilaya*-level controls. We control for popula-

tion, the number of polling stations, the percent of the nation's commerce, construction, industry, and administrative entities, the rate of illiteracy, the percent with a high school education, the percent with a university education, the percent female, percent single, number of associations, the FIS' vote share in 1991, and the number of government offices.

Table A.13. Massacres and the December 2019 Elections

	Dependent variable:	
	Tebboune Vote Share	Turnout
	(1)	(2)
Massacres (logged)	4.67*** (1.35)	−1.37** (0.66)
Turnout	0.45 (0.34)	
Population	0.0000 (0.0000)	−0.0000 (0.0000)
Polling Stations	−0.01 (0.02)	0.01 (0.01)
Entities-Commerce	−0.74 (0.81)	0.79* (0.40)
Entities-Construction	4.56 (6.85)	5.93* (3.42)
Entities-Industry	1.36 (2.32)	0.78 (1.20)
Entities-Administrative	−16.08 (12.46)	−10.85* (6.21)
Illiteracy	0.96 (0.69)	0.45 (0.35)
High School Education	−1.86 (2.12)	1.05 (1.09)
University Education	0.11 (2.85)	−2.41 (1.42)
Percent Female	5.99 (5.81)	5.15* (2.89)
Percent Single	−1.39 (1.14)	−1.03* (0.57)
Associations	1.16 (1.51)	0.83 (0.78)
FIS 1991 Vote Share	−8.56 (37.46)	73.52*** (14.60)
Government Offices	0.04 (0.06)	0.06** (0.03)
Constant	−156.73 (272.73)	−258.20* (134.82)
Observations	48	48
R^2	0.49	0.77
Adjusted R^2	0.22	0.66

*Note: *p<0.1; **p<0.05; ***p<0.01*

References

Kuriakose, Noble & Michael Robbins (2016) Don't get duped: Fraud through duplication in public opinion surveys. *Statistical Journal of the IAOS* 32(3): 283–291.