

# Commitment to Rebellion: Evidence from Syria

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## Supplementary Online Appendix

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Figure 1. Areas of Rebel Control in Aleppo at the time of our study

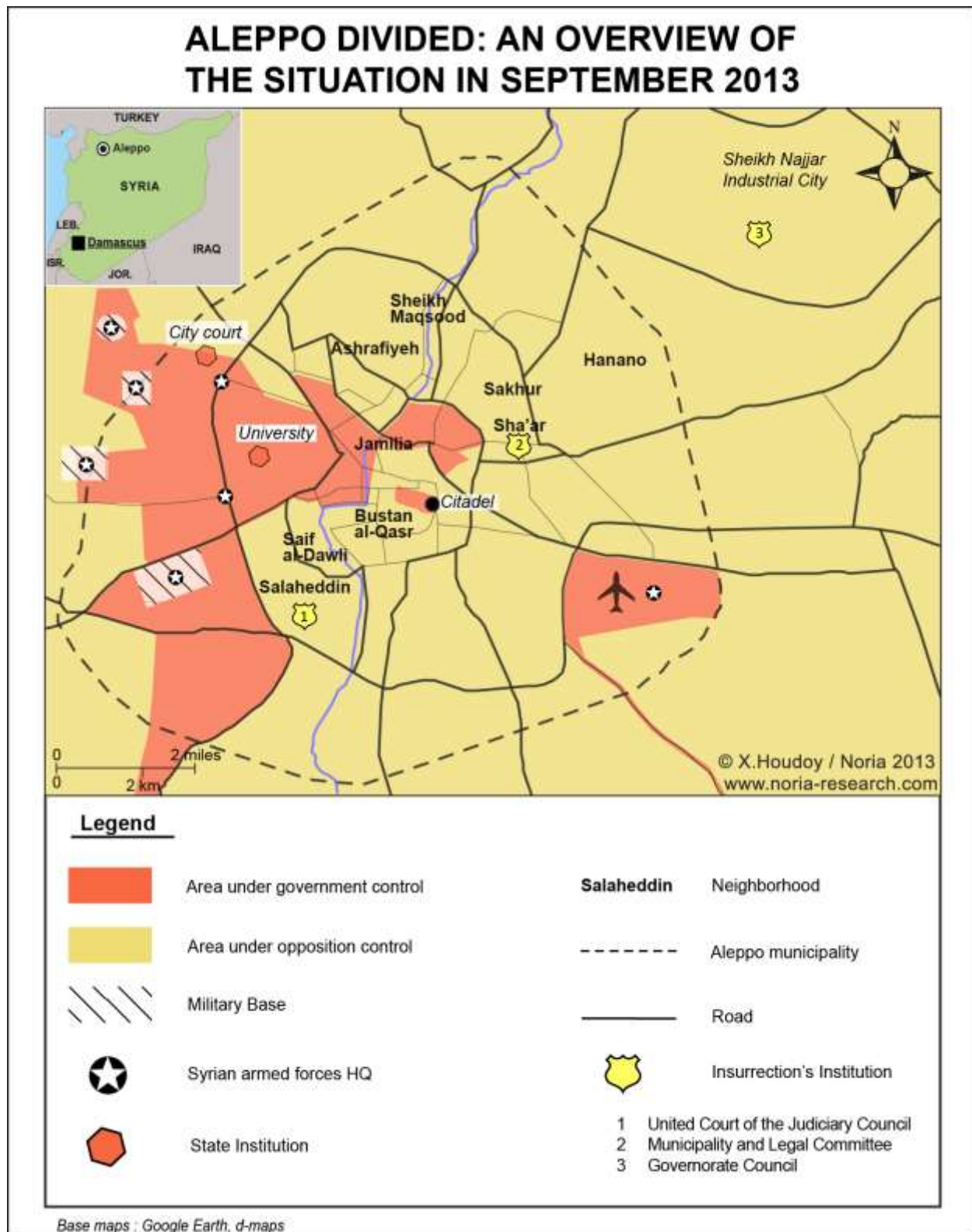
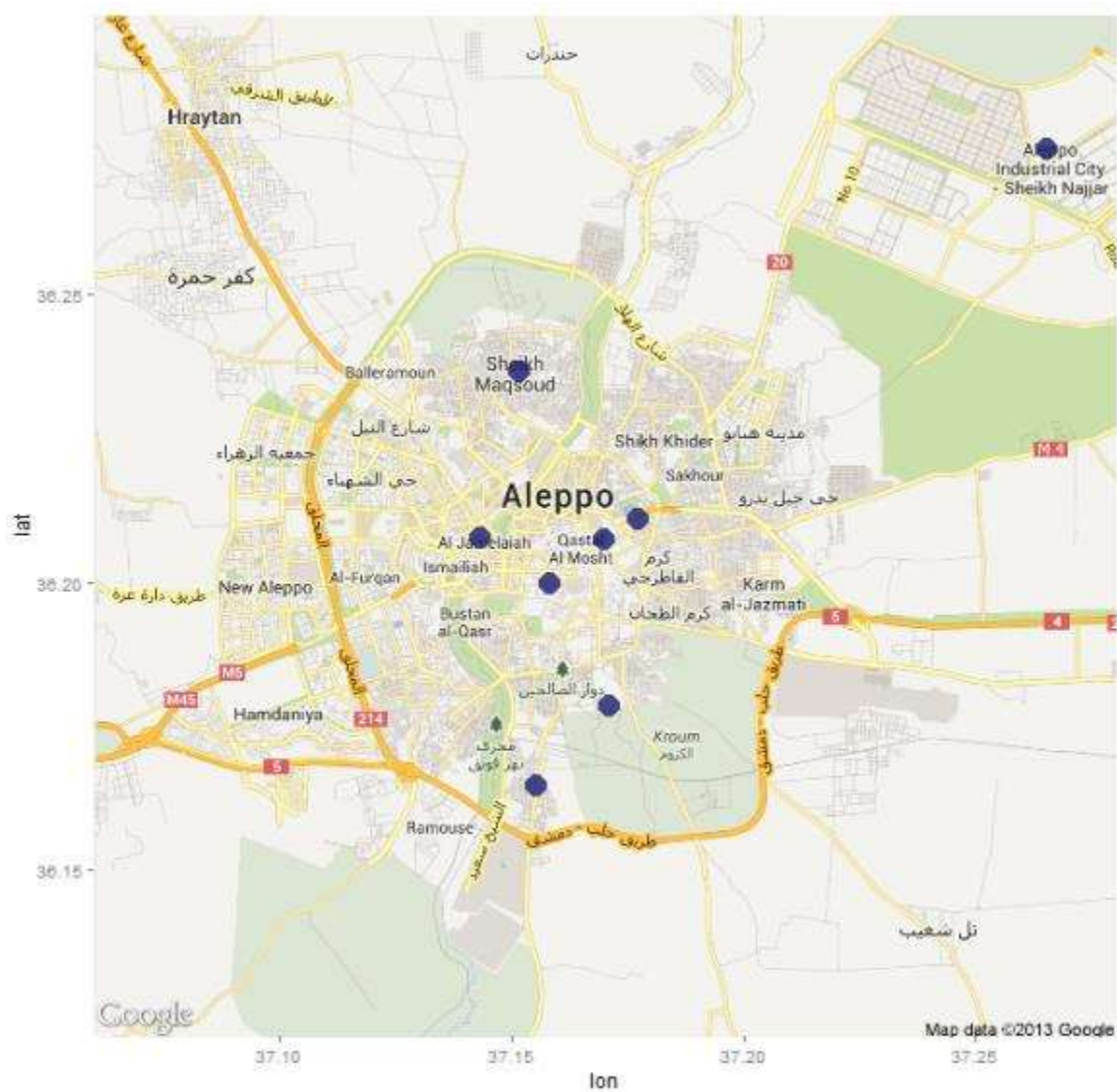


Figure 2. Sampling Locations in Aleppo



**Figure 3. Sampling Locations In and Around Idlib**





**Table 1. Role Differentiation in the Syrian Conflict**

**A. Reasons given for Leaving Syria (Refugees, ex-FSA fighters only)**

<i>Why did you decide to leave Syria?</i>	Refugees in UNHCR camp		Ex-FSA in Turkey	
	Reason	Main reason	Reason	Main reason
Too dangerous to stay	56.7	40.7	84.0	48.0
People threatened me that I should leave	35.0	11.9	72.0	12.0
My family convince me to leave	46.7	6.8	58.0	6.0
My friends convinced me to leave	38.3	5.1	28.0	4.0
Most of my neighbors also left	31.7	1.7	5.0	
I had no other place in Syria to stay	26.7	1.7	2.0	
Government forces destroyed my home	31.7	5.1	0.0	
The costs of living inside Syria became too high	31.7	5.1	16.0	6.0
I ran out of money and could no longer stay	16.7	5.1	2.0	
Government forces took over my town	43.3	13.6	18.0	2.0
Rebel groups took control of my town	13.3	3.4	24.0	11.0
N	60	59	50	50

*Refugees: Why did you leave?* Explanations for refugee flight are indicative of risk aversion (Appendix Table 1.A). A plurality of civilian refugees and ex-FSA fighters who we interviewed in Turkey say they left mainly because it was simply too dangerous to stay (41% and 48% respectively). In some cases, they fled because their towns/homes had come under government control (14% of civilian refugees) or other rival rebel groups like the Islamic State or ISIS (11% of ex-fighters). Social pressure also appears to have played a role in their decision. Some say they were threatened/warned by others to leave (12% of civilians and ex-fighters), or that their friends and family pressured them to leave (12 % of refugees and 10% of ex-fighters).

### B. Reasons Given for Staying in Syria (Civilians in Syria only)

<i>To what extent do you agree with the following statements?</i>	% agree	N
I have no other option but to stay here	66.3	80
I would go somewhere safer if I had family, friends to help me	47.6	84
I would go somewhere safer if I had money to do so	42.2	83
I would go somewhere safer if travel were less dangerous	38.2	76
I am staying to protect my family	51.3	80
I am staying to protect my home/property	59.0	83
I am staying to fight	56.5	85
I am staying to help those who are fighting	62.4	85

*Civilians: Why do you stay?* Civilian rationales for staying in the combat zone are mixed (Appendix Table 1.B). A majority say they are there to assist rebel forces in the fight (63 %), but as many also claim they have no other options but to stay (66 %). For example, many say they do not have family and friends (48 %) or money to travel to a safer location (42%) or think that traveling may be more dangerous than staying in place (38%). More than half also claim they are staying to protect their homes (59 %) and other family members (51 %). Hence, a combination of selective incentives, social pressure, and risk aversion could play an important role in explaining civilian reluctance to leave combat zones.

### C. Reasons for Not Joining Rebel Groups (Civilians, Refugees Only)

Reasons Given (%)	Civilians	Refugees
I have to take care of my family	2.4	50.0
I have a job and I need the money	2.4	38.3
My family does not want me to join	18.8	46.7
I was never asked to join	31.8	46.7
My religious views do not permit me to fight	7.1	13.3
I do not support the goals of the rebel groups	27.1	0.0
I do not have skills necessary for combat	83.5	61.7
I am too old or not in good health	17.7	1.7
I am fearful of what will happen to me if I join	38.8	35.0
N	85	60

*Civilians and Refugees: Why didn't you join?* Civilian and refugee rationales for not joining rebel groups are mixed (Appendix Table 1.C). We ask both civilians and refugees why they chose not to join rebel groups in their towns and communities. Most civilians and refugees explain that they do not have skills necessary for combat (83.5% and 62% respectively). Some civilians indicated that they did not join for age and health related reasons (18%). A sizable minority fear what will happen to them if they join (39% civilians and 35 % refugees), again suggesting risk aversion. Some also face family pressure not to join (19% civilians and 47 % refugees), highlighting the importance of social sanctioning. In addition, almost a third of civilians in Syria refuse to join because they do not support goals of the rebel groups (27 %). However, others say they simply were never asked by any groups to join (32% civilians and 47% refugees), which may speak to the capacity of rebel recruitment efforts. Refugees in Turkey also tended to give selective incentive-based explanations for not joining. Half of refugees (50%) said that they did not join because they have to take care of the family and half (50%) also said that they could not join because they have a job and need money.

#### D. Reasons Given For Fighting (Active, Former FSA and Islamists)

<i>Why did you join this group?</i>	Active FSA		Former FSA		Islamists	
	Reason given	Main reason	Reason given	Main reason	Reason given	Main reason
Because Assad must be defeated	70.0	12.5	74.0		89.8	
To take revenge against Assad's forces	81.4	44.6	84.0	8.0	79.6	
To defend my community	70.5	12.5	54.0	26.0	83.7	18.2
I support the goals of the group	62.3	17.8	78.0	50.0	100.0	50.0
I felt inspired by people in the group	54.2	1.8	92.0	4.0	61.2	6.8
Because all my friends joined	48.3	3.6	84.0	10.0	44.9	
All my family wanted me to join	16.7	1.8	28.0		4.1	
Because I wanted people to respect me	10.0	1.8	0.0		0.0	
I didn't want to join, but was forced to	4.9	1.8	0.0		0.0	
I joined because I needed money	0.0	1.8	0.0		0.0	
I joined to fight for Islam, to build an Islamic state	-	-	-	-	71.4	25.0
I joined to get training, combat experience	-	-	-	-	71.4	
Fatwas by the Ulama led me to fight	-	-	-	-	63.3	
N	61	56	50	50	49	44

*Rebel Fighters: Why did you join?* Compared to non-combatant civilians and refugees, rebel fighters offer strong anti-government rationales for joining the insurgency (Appendix Table 1.D). Most fighters tell us that they joined to “take revenge against the Assad regime” (81.4 % of FSA fighters, 84 % of ex-FSA fighters and 79.6 % of Islamist fighters), “because Assad must be defeated” (70 % of current FSA fighters, 74 % of former FSA fighters and 90 % of Islamist fighters) and “to defend their community” (71% of FSA fighters, 54 % of former FSA fighters and 84 % of Islamist fighters). Islamists also claim to want to build an Islamic State (71%), to gain combat training and experience (71%), and many say they joined in response to a religious instruction or *fatwa* (63%). Concerned that active fighters might feel pressure to misrepresent their intentions, we also asked fighters to consider the motives of others for joining but their beliefs about motives of others are largely consistent with their own (Appendix Table 1.E).



### E. Reasons Given For Why Others Fight (Former FSA and Islamists)

<i>Why do you think other people join your group?</i>	Former FSA Reasons given	Islamists Reasons given	Main reason
Because Assad must be defeated	44.0	93.9	4.2
To take revenge against Assad's forces	70.0	89.8	14.6
To defend their communities	64.0	98.0	20.8
They support the goals of the group	70.0	85.7	33.3
They felt inspired by people in the group	80.0	73.5	6.3
Because all their friends joined	48.0	34.7	
Their families wanted them to join	0.0	8.2	
Because they wanted respect	0.0	2.0	
They didn't want to join, but were forced	0.0	2.0	
They joined because they needed money	0.0	0.0	
They joined to fight for Islam, to build an Islamic state	24.0	83.7	20.8
To get training, combat experience	10.0	69.4	
N	50	49	48

**Table 2a. Regression Models for Manuscript Figure 2 (OLS)**

VARIABLES	(1) Fight until victory	(2) Fight until victory	(3) Fight until victory	(4) Fight until victory
islamist	1.475*** (0.181)		1.579*** (0.199)	1.349*** (0.211)
fsafighter	1.091*** (0.201)		1.188*** (0.224)	0.942*** (0.226)
exfighter	0.355 (0.269)		0.561* (0.292)	0.393 (0.286)
civilian	0.225 (0.227)		0.227 (0.292)	0.382 (0.271)
optimism bias		0.260*** (0.0560)		0.195*** (0.0576)
risk tolerance		0.309*** (0.0616)		0.180*** (0.0627)
identity fusion		0.231*** (0.0757)		0.244*** (0.0760)
female			0.491** (0.238)	0.432** (0.192)
age			0.0116 (0.00843)	0.0133 (0.00821)
education			0.133 (0.113)	0.0669 (0.112)
working			0.189 (0.207)	0.226 (0.198)
professional			-0.452** (0.199)	-0.422** (0.189)
laborer			-0.256 (0.230)	-0.253 (0.216)
sectarianism			0.118 (0.159)	0.245* (0.139)
injured			0.140 (0.138)	0.157 (0.134)
familykilled			-0.0569 (0.142)	0.0154 (0.134)
timehere			0.0385 (0.0491)	0.0278 (0.0491)
aleppo			-0.0837 (0.227)	0.0151 (0.197)
Constant	2.525*** (0.181)	0.898*** (0.326)	1.424*** (0.525)	-0.315 (0.548)
Observations	302	293	281	273
adj. r2	0.184	0.168	0.204	0.298

Robust standard errors in parentheses, \*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

**Table 2b. Regression Models for Manuscript Figure 2, continued (OLS)**

VARIABLES	(1) Immediate ceasefire	(2) Immediate ceasefire	(3) Immediate ceasefire	(4) Immediate ceasefire
islamist	-1.576*** (0.188)		-1.622*** (0.215)	-1.309*** (0.225)
fsafighter	-0.941*** (0.225)		-0.945*** (0.258)	-0.667** (0.265)
exfighter	-0.438 (0.272)		-0.579* (0.297)	-0.409 (0.294)
civilian	-0.0232 (0.228)		0.0187 (0.303)	-0.0583 (0.282)
optimism bias		-0.283*** (0.0583)		-0.195*** (0.0615)
risk tolerance		-0.338*** (0.0657)		-0.225*** (0.0679)
identity fusion		-0.218*** (0.0807)		-0.196** (0.0806)
female			-0.290 (0.284)	-0.170 (0.248)
age			0.00545 (0.00887)	0.00394 (0.00872)
education			-0.114 (0.120)	-0.0566 (0.114)
working			-0.0573 (0.234)	-0.0762 (0.223)
professional			0.231 (0.221)	0.194 (0.216)
laborer			-0.0860 (0.250)	-0.135 (0.228)
sectarian			-0.176 (0.177)	-0.343** (0.155)
injured			-0.0467 (0.149)	-0.0600 (0.142)
familykilled			0.182 (0.157)	0.105 (0.149)
timehere			-0.0199 (0.0534)	-0.0180 (0.0541)
aleppo			-0.0212 (0.262)	-0.158 (0.221)
Constant	2.678*** (0.183)	4.449*** (0.328)	3.041*** (0.577)	4.797*** (0.571)
Observations	299	289	278	270
adj. r2	0.192	0.172	0.190	0.285

Robust standard errors in parentheses, \*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

**Table 3. Regression Model for Manuscript Figure 3 (Logit)**

VARIABLES	(1) allfighter
Optimism bias	0.498*** (0.132)
Risk tolerance	0.488*** (0.135)
Group cohesiveness	0.398** (0.174)
female	-0.993 (0.653)
age	-0.00570 (0.0190)
education	-0.434* (0.242)
working	0.0155 (0.486)
professional	0.223 (0.435)
laborer	-0.276 (0.469)
sectarianism	1.155*** (0.361)
injured	0.594* (0.306)
familykilled	1.103*** (0.312)
timehere	-0.373*** (0.114)
aleppo	0.305 (0.442)
Constant	-2.651** (1.305)
Observations	275
adj. r2	0.250
ll	-142.2

Robust standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

**Table 4. Variable Description and Coding**

Variable	Description	Mean	SD	N
Fight until victory	Tell me whether you support or oppose the following [Continue Fighting until victory, no negotiations] 1 = strongly support, 4 = strongly oppose	3.10	1.23	302
Immediate ceasefire	Tell me whether you support or oppose the following [Immediate ceasefire to begin negotiations] 1 = strongly support, 4 = strongly oppose	2.16	1.30	299
Optimism Bias	How likely is it in the next year that Assad's forces will be defeated by the FSA? 1 = not likely at all to 4 = very likely	2.40	1.13	302
Risk Tolerance	Agree/Disagree: "I am not afraid to take risks" 1 = strongly disagree to 4 =strongly agree	2.68	1.10	303
Group Cohesiveness	How close do you feel to the Free Syrian Army? 1 = not close at all to 4 = very close	3.24	0.86	300
Female	1 = female subject, 0 = male subject	0.12	0.33	305
Age	Subject age in years from 18 to 60	29.80	9.39	296
Education	Subject education from 1 = no formal education to 4 = post-secondary education	2.47	0.72	296
Employed	1 = working before the war, 0 = unemployed, not working	0.84	0.37	297
Professional	1 = working in skilled professional position before war	0.35	0.48	297
Laborer	1 = working as a skilled, unskilled laborer before war	0.18	0.38	297
Student	1 = was a student before the war	0.30	0.46	297
Religiosity	How important are your religious beliefs to you in your daily life? 1 = not at all important to 4 =very important	3.17	0.97	304
Close Sunni	How close do you feel to Sunni Muslims in Syria 1= not close at all to 4 =very close	3.32	0.76	299
Close Alawite	How close do you feel to Alawites in Syria 1= not close at all to 4 =very close	1.62	0.81	299
Close Assad Supporters	How close do you feel to supporters of Assad 1= not close at all to 4 =very close	1.23	0.48	296
Sectarianism	Index of sectarian views ranging from low (-0.5) to high (4) sectarian views.	0.95	0.58	304
Personally injured	1 = injured as a result of violence during the war, 0 = not injured	0.55	0.50	305
Family killed	1 = family member killed as a result of war, 0 = no family member killed	0.61	0.49	305
Time here	How long have you been in your current location? 1= less than 1 week to 7 = more than 2 years	4.71	1.78	304
Aleppo	1 = subject interviewed in Aleppo	0.31	0.46	305

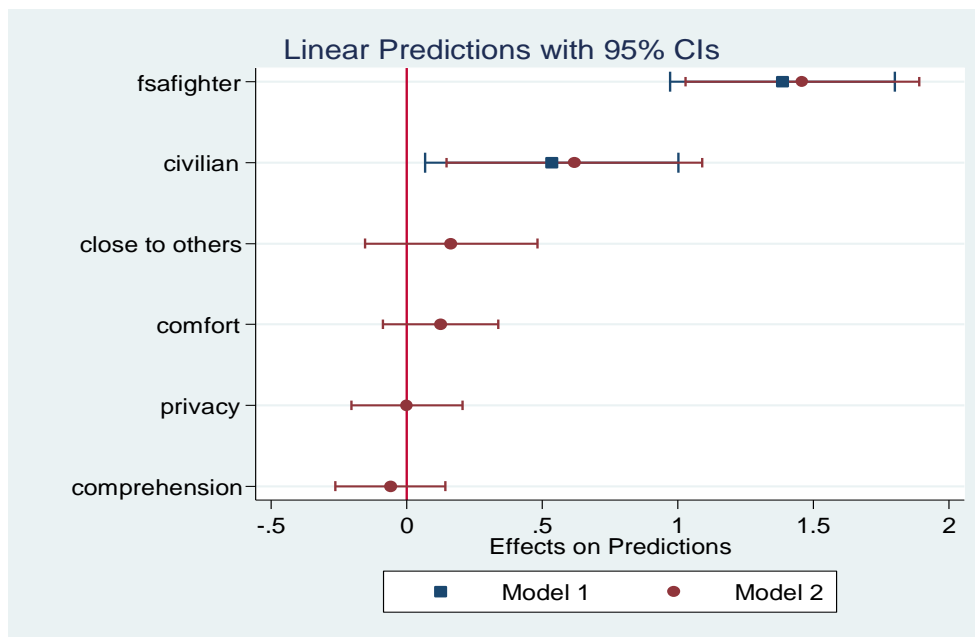
## Social Desirability Bias in Survey Response Items

We understand concerns about social desirability in responses. Even though we see variation across groups in terms of commitment to fighting, could there be within-group policing and socialization affecting responses? In particular, are respondents influenced by first and second order neighbors and would the awareness that neighbors were completing the survey would lead to enforced socialization and policing in close-knit homogeneous communities? These are valid concerns. Our sampling plan called for clusters of 5 with a maximum of two clusters per street. First, we explicitly restrict sampling to only 1 household member (which includes extended family members) to avoid the most immediate family-based policing. In practice, our interviewer, working alone, never exceeded the 5 person cluster per street (which is too small to perform any meaningful cluster-level fixed effects analysis). Because she was working alone, five interviews in a given day was her physical limit. She never returned to the same street. Hence, we do not have the problem where all the respondents in our sample are basically from the same two streets in Aleppo, and were intimately familiar with one another in a way that would encourage social desirability bias due to neighborhood policing. Figure 2 in our online appendix indicates that sampling locations were across large areas of eastern Aleppo. She also took care to ensure privacy in the interview process to avoid onlookers or places where others could observe or police responses.

To increase our confidence in this assessment, we turn to para-data. Our interviewer recorded the level of *privacy* in the interview process, the respondent's *comfort* level with answering questions (which could proxy for fear of policing or self-policing), an assessment of the respondent's *comprehension* of survey questions. We also included a measure of *closeness to others* in one's current location. In the figure below, we regress these indicators of respondent comfort and comprehension on our key dependent variable (fighting commitment, fight until victory). Model 1 includes OLS coefficients for FSA fighters and civilians with refugees and Turkey as the comparison group. Model 2 includes controls for subject *privacy*, *comfort*, *closeness to others*, and *comprehension*. Although we did not collect para-data on interviews with Islamists and ex-FSA fighters, results in the figure below show that variation in *privacy*, *comfort*, *closeness to others*, and *comprehension* do not have an impact on overall commitment to fighting responses, nor does the inclusion of these controls significantly impact the interpretation of results for FSA fighter and civilian coefficients. This increases our confidence that social desirability bias is not significantly driving our results.

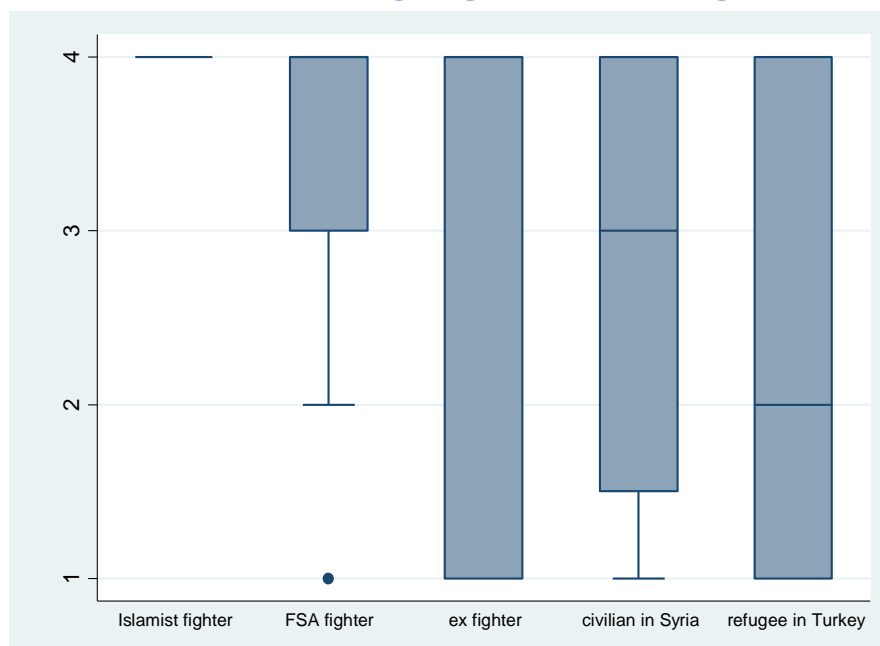


**Figure 4. Impact of Paradata Controls on Survey Responses (OLS, Fight until Victory)**



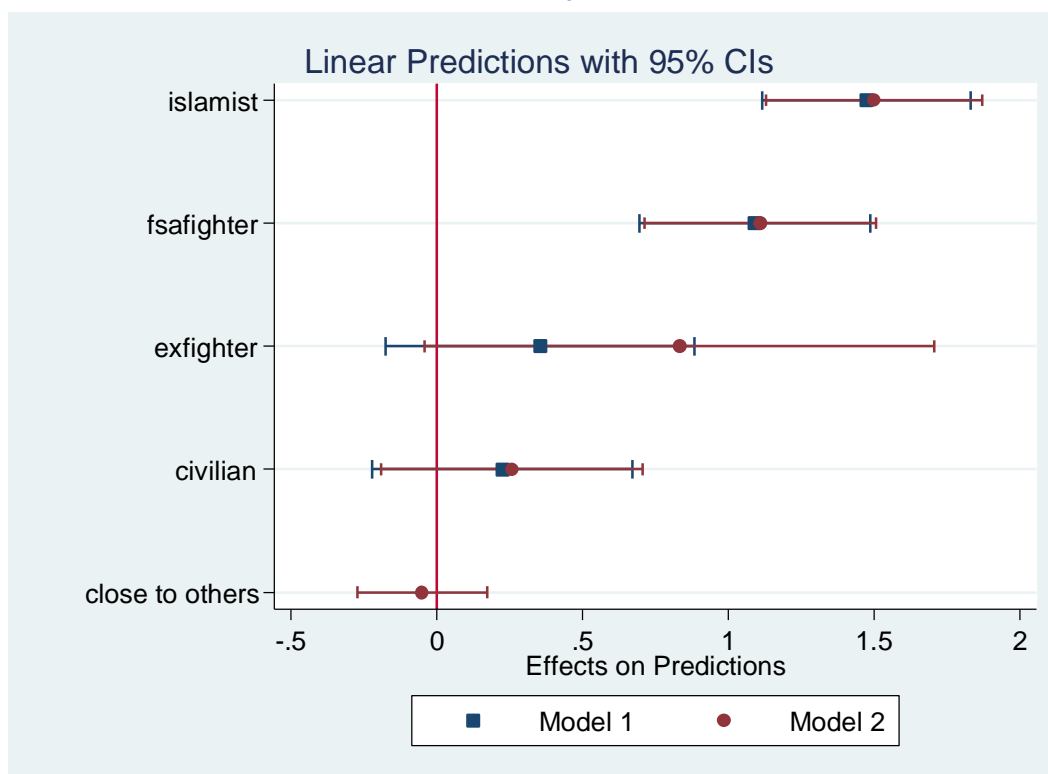
We also can look at the distribution of responses to questions on fighting commitment as an indicator of possible social desirability bias influencing results. Aside from Islamists, all other groups indicate a full range of variation in rebel commitment to fighting from highly committed to highly opposed. If social desirability were a major problem, we would suspect less variation in sample responses due to concerns about social policing. However, many individuals feel quite comfortable signaling their lack of commitment to fighting and support for a ceasefire to begin negotiations with the Assad regime.

**Figure 5. Box-Whisker Plot of Fighting Commitment (Fight Until Victory)**



Finally, although we do not have para-data on interviews with Islamists, we can assess their closeness to others in their location as a proxy for monitoring and policing. The assumption is that those who feel closer to others in their current location might be more sensitive to monitoring and policing cues from the environment. In the figure below, we regress *closeness to others in current location* (ranging from 1 = not close at all to 4 = very close) against our dependent variable (fighting commitment, fight until victory). In Model 1 we include coefficients from OLS regression for each subgroup (refugees in Turkey are the constant comparison group) on fighting commitment. In Model 2, we include an additional control for closeness to others. We find that the inclusion of this control has no impact on fighting commitment responses. Results are comparable using the alternative DV “Immediate Ceasefire”.

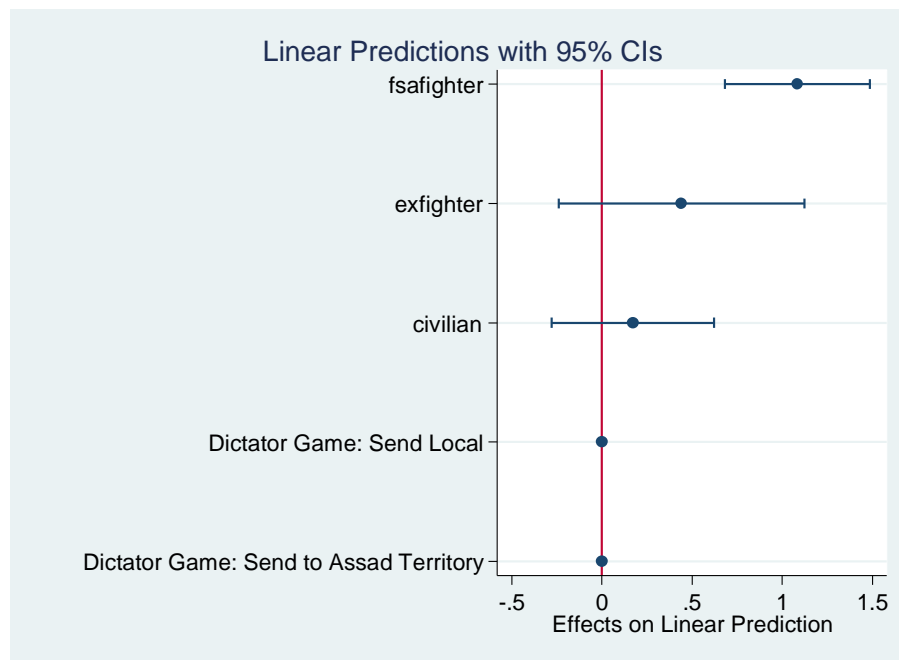
**Figure 6. Closeness to Others and Commitment to Fighting (OLS Regression, Fight Until Victory)**



## Response Biases Due to Financial Incentives to Participate in the Study

Incentives to participate in the study. With the exception of Islamists, subjects had the opportunity to earn up to 500 Syrian pounds (approximately \$5) at the time for completing the study. This payment was paid through the completion of a series of dictator games, where subjects must decide how much money to keep for themselves and how much to give to another person in their current location. Payments were not made until the end of the survey and respondents did not know for which task they would be paid until the end. We decided not to offer payment for Islamists because we were worried that this would contradict US laws anti-terrorism laws with respect to providing financial aid to terrorist groups. In the regression model below, we show that decision-making in the two main dictator games (how much to keep vs. send locally and how much to keep vs. send to someone in Assad-controlled territory) are not predictive of fighting commitment (OLS regression, DV = Fight until Victory). Hence, we do not find evidence that financial incentives are causing response bias.

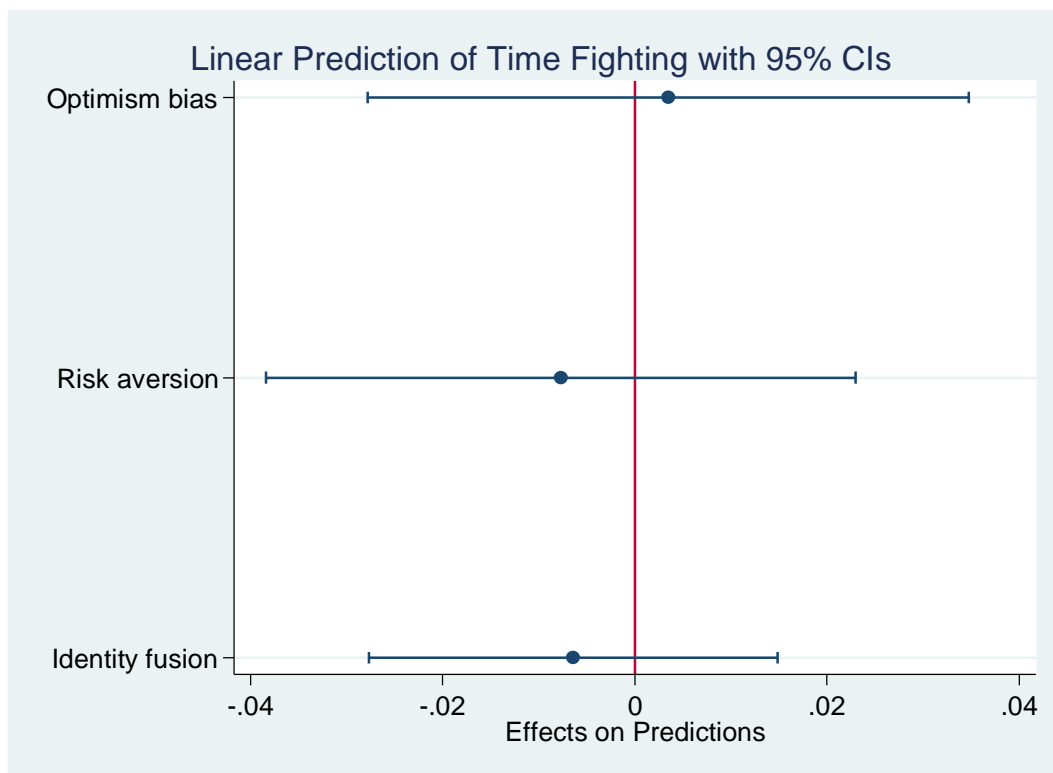
Figure 7. Effects of Dictator Game Giving on Fighting Commitment



## Interpretation of Results

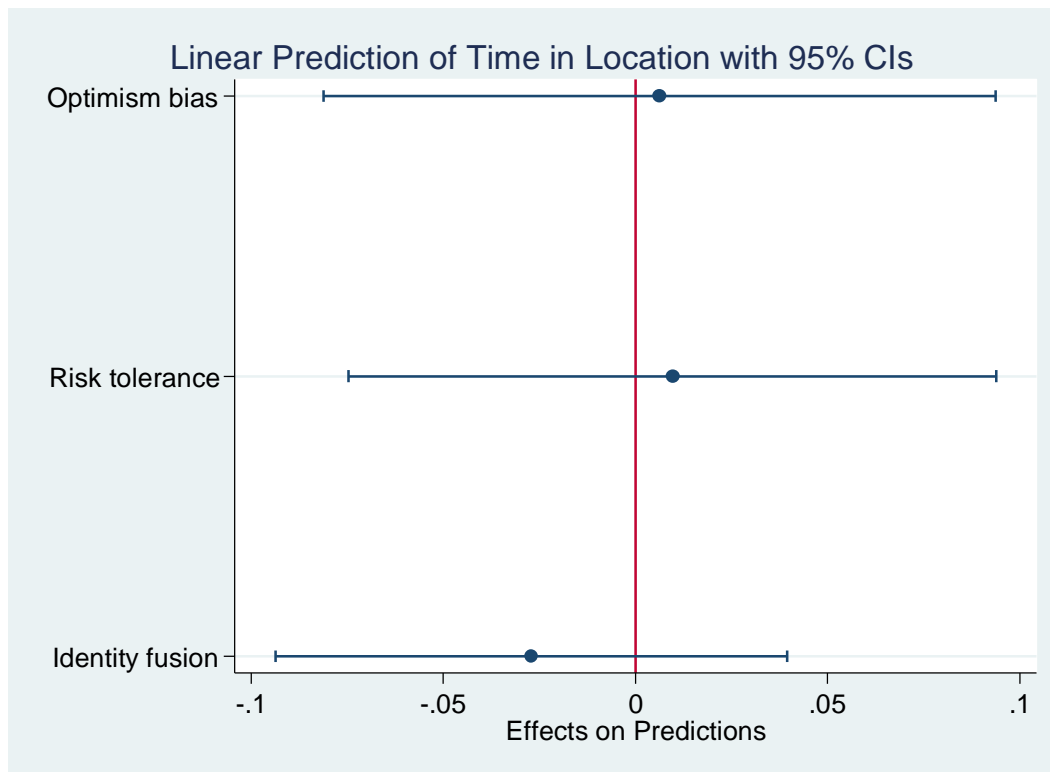
We caution against making broad causal claims from our limited data. We also cannot evaluate causal mechanisms based on our results. With respect to psychological effects of identity fusion, it is true that we cannot identify causal effects due to endogeneity between outcome and predictor variables. However, we can use what data we have to help clarify whether identity fusion, optimism bias, and risk tolerance is more likely an effect of having joined rebel groups than a potential cause. First, we have data on 128 active rebel fighters and ex-fighters on how long they were fighting. Time fighting or having fought (in the case of ex-fighters) ranged from 1 month to 24 months with an average of 11.5 months ( $SD = 8.6$  months). We can regress this on our mechanistic variables (optimism bias, risk aversion, identity fusion) to explore whether such psychological factors are predispositions (most likely prevalent at the onset of joining rebel groups) or whether they are acquired over time through fighting. In the figure below, we provide regression coefficients of “time fighting” on optimism bias, risk aversion, and identity fusion, where time fighting is treated as an IV with separate regressions for each DV. In the figure below, we show that time fighting does not lead to increases in the DVs, which suggests that fighters are self-selected on optimism bias, risk aversion, and identity fusion, rather than simply acquiring those attributes after joining rebel groups. The results are the same when we exclude ex-fighters and only report active fighters.

**Figure 8. Effects of Time Fighting on Optimism Bias, Risk Tolerance, Identity Fusion**



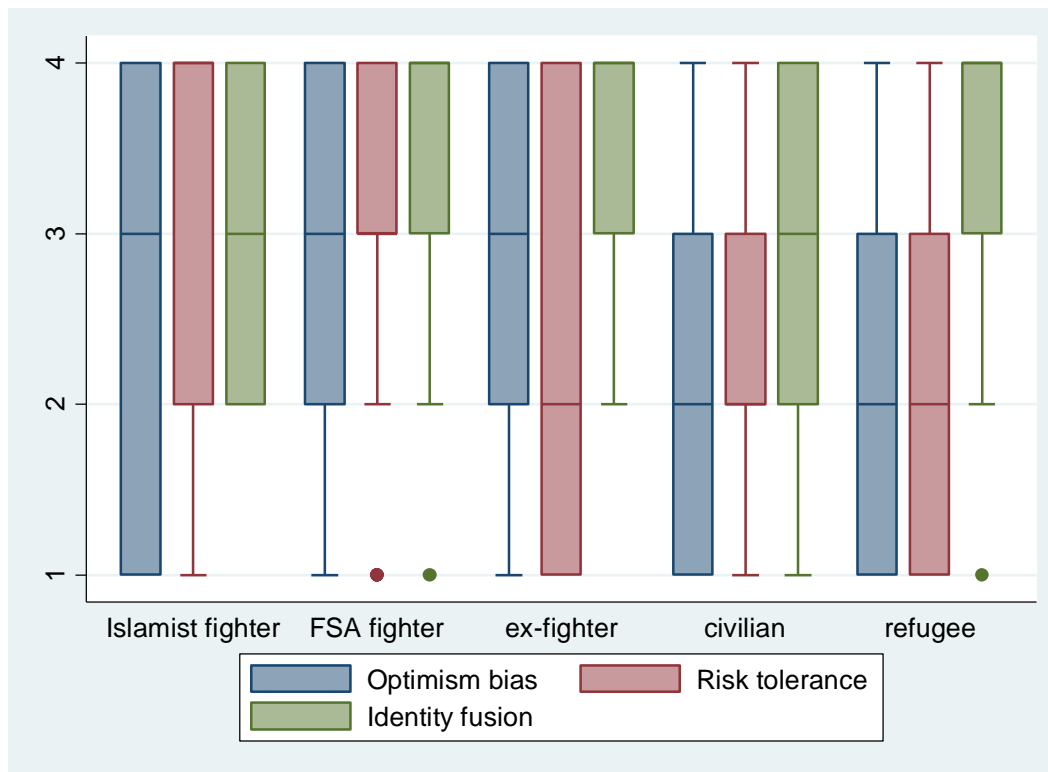
We can also examine whether optimism bias, risk tolerance, and identity fusion increase with one's time spent in a given location. When we regress how long subjects are living in their current location (ranging from less than 1 week to more than 2 years before the conflict began) on optimism bias, risk aversion, and identity fusion for the full sample (fighters, civilians, and refugees,  $N = 301$ ), we find that increased time in a given location has no significant effect on our DVs, which again points to self-selection on these characteristics rather than adaptation over time.

**Figure 9. Effects of Time in Location on Optimism Bias, Risk Tolerance, Identity Fusion**



Finally, we consider whether it is tautological to assume that optimism bias, risk aversion, and identity fusion would predict commitment to fighting. In other words, being optimistic, risk averse, and having strong group bonds is just a proxy for group membership. The figure below, however, shows that there is actually good variation on optimism bias, risk aversion, and identity fusion within each sub-group of islamist fighters, fsa fighters, ex-fighters, civilians, and refugees. In other words, not everyone who fights for FSA is a highly optimistic, risk tolerant individual with strong in-group bonds to the group. We find this quite interesting pointing to heterogeneous psychological preferences and attitudes within fighting groups. We feel this variation helps reduce concerns about tautological effects driving our results and points to new directions for future research on rebel group cohesiveness and commitment to fighting.

**Figure 10. Subgroup Variation in Optimism Bias, Risk Tolerance, Identity Fusion**



Overall, we feel the effects of optimism bias, risk aversion, and identity fusion are likely due to self-selection on these characteristics among those who are committed to continuing the fight. We introduce these concepts into the analysis in part because the existing literature on rebel group violence has hit a wall in terms of the explanatory power of convention “greed vs grievances” and social sanctioning arguments (Humphreys and Weinstein 2008). We think the psychological predispositions to violence offer a new direct to focus attention on who is committed to fighting for the long-term. At the same time, we are careful not to make strong causal claims due to the observational nature of our data.