Institutional Corruption and Election Fraud: Evidence from a Field Experiment in Afghanistan*

Michael Callen† and James D. Long‡

February 25, 2013

Abstract

We investigate the relationship between political networks, weak institutions, and election fraud during the 2010 parliamentary election in Afghanistan combining: (i) data on political connections between candidates and election officials; (ii) a nationwide controlled evaluation of a novel monitoring technology; and (iii) direct measurements of aggregation fraud. We find considerable evidence of aggregation fraud in favor of connected candidates and that the announcement of a new monitoring technology reduced theft of election materials by about 60 percent and vote counts for connected candidates by about 25 percent. The results have implications for electoral competition and are potentially actionable for policymakers.

JEL codes: P16, D72, D73

Keywords: Election Fraud, Corruption

* *Authors' Note*: We are grateful to Glenn Cowan, Jed Ober, Eric Bjornlund, Evan Smith, and Jon Gatto at Democracy International (DI) and Nader Nadery, Jandad Spinghar, and Una Moore at the Free and Fair Elections Foundation of Afghanistan (FEFA). We acknowledge the support of USAID Development Innovation Ventures (DIV), DI, and grant #FA9550-09-1-0314 from the Air Force Office of Scientific Research (Callen). We are indebted to James Andreoni, Luke Condra, Gordon Dahl, Daniel Egel, Col. Joseph H. Felter, Ray Fisman, Tarek Ghani, Susan Hyde, Radha Iyengar, Danielle Jung, David Laitin, David Lake, Karthik Muralidharan, Paul Niehaus, Ngoc Anh Tran, Maura O'Neill, Shanker Satyanath, Jacob Shapiro, Scott Worden, Christopher Woodruff and seminar participants at the NBER Political Economy Meeting, the 2011 NEUDC conference, George Mason University, the Development and Conflict Research (DACOR) conference, the 2011 Institute on Global Conflict and Cooperation (IGCC) conference, UC San Diego, Yale, the Center for Global Development (CGD), and USAID for extremely helpful comments. We are particularly indebted to Eli Berman, Clark Gibson, and Craig McIntosh for advice and support at all stages of the project. This project would not have been possible without the dedicated research assistance of Randy Edwards, Mohammad Isaqzadeh, Shahim Kabuli, and Arman Rezaee. Mistakes remain with the authors.

† University of California Los Angeles. Department of Political Science. 4289 Bunche Hall, Los Angeles, CA 90095. email: mjcallen@ucsd.edu

‡ Harvard Academy for International and Area Studies and University of Washington. Department of Political Science.

1 Introduction

Many governments are not responsive to their citizens. Fair elections provide an important means of improving responsiveness by making elected officials accountable to voters.[1] However, election fraud undermines this critical function in many young democracies, often at the hands of tightly networked groups of political elites. This paper examines whether candidates exploit connections to elections officials to add fraudulent votes during the aggregation process. We study this problem in Afghanistan, a country where democratic institutions are struggling to develop after the last three decades of continuous conflict.[2]

There are many ways to manipulate elections, including voter intimidation, ballot box stuffing, and changing vote totals after ballots are cast. We study the manipulation of vote totals during the aggregation process, which we henceforth call "aggregation fraud". We are interested in this particular type of fraud because it is likely to involve collusion between candidates and election officials. We collect novel data on aggregation fraud by photographing provisional vote tally sheets at individual polling centers before the aggregation process and comparing these counts to the corresponding numbers after aggregation is completed.[3] This technique, which we call "photo quick count", records the same vote totals both before and after aggregation. In a clean election, these numbers should be identical. We find differences at 78 percent of the polling locations in our observed sample. Additionally, candidates connected to officials in charge of aggregation receive an average of 3.5 fraudulent votes per polling station (about 13.7 percent of their polling station average).

We test whether announcing these measurements to election officials reduces fraud. We deliver a letter to a randomly selected set of polling center managers in 238 polling centers from an

[1] There is substantial empirical documentation of the benefits of improving political accountability (Besley and Burgess 2002; Besley, Pande and Rao 2005; Chattopadhyay and Duflo 2004; Ferraz and Finan 2008; 2011; Fujiwara 2010; Pande 2003; Martinez-Bravo et al. 2012). Additionally, in countries experiencing violent contests for state control, such as Afghanistan, fair elections may also undermine popular support for insurgents by promoting an accountable and legitimate government and by providing a forum for reconciliation (Berman, Shapiro and Felter 2011; Besley and Persson 2009; McChrystal 2009; United States Army 2006; World Bank 2011).

[2] Rashid (2009) provides the authoritative account of how the patronage networks of Afghan warlords are undermining political development in Afghanistan.

[3] In many countries, it is standard for election officials to record vote totals at a particular polling center on an election returns form and then post the form on the outside of the polling center, indicating vote totals at the polling centers to local residents.

experimental sample of 471 polling centers.[4] The letter explains how photo quick count works and announces that the measurement will be taken. Our nationwide experimental sample comprises 7.8 percent of polling centers operating on election day and spans 19 of Afghanistan's 34 provinces.

This experiment produces four main results. First, the photo quick count announcement reduced theft of election materials by candidate representatives from 18.9 to 7.9 percent (a reduction of about 60 percent). Second, it reduced votes for politically powerful candidates at a given polling location from about 20 to about 14.5 (a reduction of about 25 percent). Treatment effects are also larger for candidates connected to officials in charge of aggregation in their constituency. These candidates lost about 6.5 votes as a result of the intervention. Third, the intervention has a large impact on fraud measured directly using photo quick count. Point estimates for this effect range between 9.37 and 17.17 fewer votes added during aggregation for candidates connected to the provincial aggregator.[5] Last, we find that having a neighbor treated within one kilometer is associated with an additional reduction of about six votes, suggesting our estimates may slightly understate the true effect.

Our results relate to empirical findings in four strands of literature on the economics of corruption. First, as in the important examples provided by Bertrand et al. (2007) and Olken and Barron (2009), we find that corruption limits the ability of governments to correct externalities. The purpose of electoral law is to ensure that election outcomes reflect the will of the electorate. We show that this function is undermined by a faulty aggregation process. Second, the effects of announcing photo quick count depend on pre-existing connections between candidates and election officials. Fragile democracies provide many examples of elected officials sharing rents with their networks (Fisman 2001; Khwaja and Mian 2005). Free and fair elections may place limits on this (see, for example, Ferraz and Finan 2008; 2011), and so patronage networks might have incentives to coordinate when capturing elections. This suggests the possibility of multiple equilibria in corruption as discussed in Olken and Pande (2011); the same intervention can have very different effects depending on pre-existing political relationships. Third, we examine the determinants of

[4]Polling center managers are election officials tasked with managing the voting process on election day and overseeing the counting of votes at the end of the day in their assigned polling center.

[5]These large bounds on the estimated treatment effect are due to substantial treatment-related attrition in this measure. We calculate these bounds using the trimming method of Lee (2009).

equilibrium patterns of corruption (Shleifer and Vishny 1993; Cadot 1987; Rose-Ackerman 1975; Svensson 2003), focusing on the role of candidate connections. Last, our experiment relates to the growing body of experimental and quasi-experimental assessments of initiatives to improve elections (Aker, Collier and Vicente 2010; Fujiwara 2010; Hyde 2007). Our project also draws direct inspiration from work in development economics on efforts to improve transparency and accountability (Atanassova, Bertrand and Niehaus 2011; Duflo, Hanna and Ryan 2011; Di Tella and Schargrodsky 2003; Ferraz and Finan 2008; Olken 2007; Yang 2008).[6]

We point to three implications for policies aimed at strengthening democratic institutions. First, aggregation fraud was a serious problem in this election. When electoral institutions are weak, candidates may be able to leverage their ties to officials to distort electoral outcomes in their favor. Second and relatedly, improving the independence of electoral institutions and constraining the ability of candidates to infiltrate the aggregation process may be important to protecting the disciplining role of elections in democracy. Third, our results suggest promise for photo quick count as a means of reducing aggregation fraud. The technology is highly compatible with implementation via Information Communications Technology. The cost of recording and centralizing information on diffuse illegal behavior is now nominal. The rapid increase in cellular connectivity and in smartphone usage in weakly institutionalized countries allows the possibility that this technology might also be adapted to citizen-based implementation.

We structure the rest of the paper as follows. Section 2 describes our experimental setting and relevant features of electoral institutions in Afghanistan. Section 3 presents results using data on directly measured aggregation fraud. Section 4 describes our experimental evaluation of photo quick count. Section 5 provides results from the experiment and Section 6 concludes.

[6]Research on the role of monitoring and anti-corruption efforts in development is advancing rapidly; we direct readers to Olken and Pande (2011) and McGee and Gaventa (2011) for excellent reviews of research in this field.

2 Institutional Background

2.1 Post-Invasion Democracy in Afghanistan

After the invasion by the United States and fall of the Taliban in 2001, a coalition of international armed forces helped to empanel a Constitutional Loya Jirga to establish democratic institutions in Afghanistan after decades of internecine conflict, civil war, and Taliban rule. In 2004, popular elections validated the Loya Jirga's choice of Hamid Karzai as president, and in 2005, Afghans voted in the first elections for the lower house of parliament (Wolesi Jirga). In 2009, Karzai was re-elected amid claims of rampant election fraud, which largely discredited the government.[7] Afghans returned to the polls in September 2010 to elect members of parliament amid a growing insurgency and a US commitment to begin withdrawing troops in July 2011. The international community viewed these elections as a critical benchmark in the consolidation of democratic institutions given doubts about the Karzai government's ability to exercise control in much of the country. Despite lingering memories of violence and widespread fraud from the 2009 election, roughly 5 million voters cast ballots in the 2010 Wolesi Jirga elections.[8]

2.2 Electoral Institutions

Three features of the parliamentary election system in Afghanistan make it particularly vulnerable to fraud. First, many seats are available within a single constituency, creating thin victory margins for a large number of positions. This both makes fraudulent votes more valuable and increases the number of potential manipulators. Second, electoral institutions in Afghanistan are just beginning to develop and remain weak. Finally, the state exercises incomplete territorial control, leaving polling centers in contested regions vulnerable to closure or capture. We discuss each of these three features in this section.

[7] Karzai initially won 53 percent of the vote, above the 50 percent threshold necessary to avoid a run-off. After an independent investigation based on physical inspections of a random subsample of ballots, Karzai's share was reduced to 47 percent. Karzai finally won re-election when his main competitor, Abdullah Abdullah, refused to participate in the run-off.

[8] The Independent Electoral Commission projected this number out of what it believes is 11 million legitimate registered voters. Afghanistan has never had a complete census so population estimates vary widely. The total population is estimated at roughly 30 million and the voting age population is roughly 16 million.

Afghanistan's 34 provinces serve as multi-member districts that elect members to the Wolesi Jirga. Each province serves as a single electoral district and the number of seats it holds in parliament is proportional to its estimated population. Candidates run "at large" within a province without respect to any smaller constituency boundaries. Voters cast a Single Non-Transferable Vote (SNTV) for individual candidates, nearly all of whom run as independents.[9] The rules declare winning candidates as those who receive the most votes relative to each province's seat share. For example, Kabul province elects the most members to Parliament (33) and Panjsher the fewest (2). The candidates who rank 1 to 33 in Kabul and 1 to 2 in Panjsher win seats.

This method for allocating seats in parliament for winning candidates provides incentives for fraud. Because many seats are available within a single province, a large number of candidates gain office with thin victory margins. SNTV with large district magnitudes and a lack of political parties also disperses votes across many candidates. The vote margin separating the lowest winning candidate from the highest losing candidate are often small. This creates a high expected return for even small manipulation for many candidates. In contrast, electoral systems with dominant parties tend to produce larger victory margins, so non-viable candidates may be less likely to rig. Because each province contains multiples seats, it remains possible for election officials involved in vote aggregation to rig votes on behalf of multiple officials simultaneously.

Electoral malfeasance in Afghanistan also arises from weak institutions tasked with managing elections. The Independent Election Commission serves as the main electoral body responsible for polling, counting votes, aggregation, and certifying winning candidates. Historically, the Independent Election Commission has proven susceptible to influence by corrupt agents. We review specific features of the aggregation process which conduce to fraud and considerable photographic evidence of fraud in Section 3 below.[10]

Informal corruption networks also play an important role in determining political outcomes in

[9]SNTV systems provide voters with one ballot that they cast for one candidate when multiple candidates run for multiple seats. If a voter's ballot goes towards a losing candidate, the vote is not re-apportioned. Although this electoral system is rare, former U.S. Ambassador to Afghanistan Zalmay Khalilzad and President Hamid Karzai promoted SNTV during the first parliamentary elections in 2005 to marginalize warlords and reduce the likelihood they obtained parliamentary seats. As a corrolary, Karzai also decreed that political parties should not be allowed to form.

[10]Similarly, Callen and Weidmann (2013) find that fraud was sufficiently severe to be detected by relatively insensitive forensic techniques in about 20 percent of the 398 districts in Afghanistan.

Afghanistan. Despite attempts to promote democratic institutions, pre-existing power structures remain highly relevant. For example, several of the main candidates in the 2010 election and a number of current government officials were warlords prior to the U.S.-led invasion. Former warlords also had considerable influence during the drafting of the Bonn Agreement, which provides the basis for Afghanistan's current political institutions.[11] Along these lines, Karzai enjoys strong links with government officials in Southern Afghanistan given his family roots in that part of the country. Former warlords fighting in the Northern Alliance against the Taliban exert strong control in Northern Afghanistan and have played a key role in the US-backed government.

Despite weak electoral institutions, candidates and officials face some possibility of punishment for rigging. The Electoral Complaints Commission, which is backed by the United Nations, exists as a separate and independent body from the Independent Elections Commission. The Electoral Complaints Commission investigates complaints against polling officials, candidates, or citizens. Any Afghan can lodge such a complaint. Based on the seriousness of a complaint and its likelihood of affecting the election's outcome, the Electoral Complaints Commission may decide to cancel all of the votes at a given polling location, all of the votes for a particular candidate at a polling location, or the total votes for a candidate across their entire constituency. The Electoral Complaints Commission over-turned some 25 percent of the ballots in this process in the 2010 election. Additionally, under its purview of fighting corruption, the Attorney General may prosecute specific individuals, including election officials and candidates, it believes to have participated in election fraud and levy fines or prison sentences against them if found guilty.

3 Aggregation Fraud

There are many ways to rig an election such as buying votes, intimidating voters, and stuffing ballot boxes. We focus specifically on fraud which happens during the aggregation process. This type of fraud typically involves adjusting votes in favor of a particular candidate and usually happens at a central aggregation center.

We capture vote totals both immediately before and directly after the aggregation process,

[11] Rashid (2009) provides an authoritative account of how warlords infiltrated Afghanistan's modern political institutions.

which took roughly one month. These data directly measure votes added or subtracted during aggregation for each candidate at each polling location in our observed sample. To our knowledge, these are the first direct measurements of aggregation fraud. We begin by examining which types of candidates benefit from aggregation fraud and summarize a few basic patterns.

3.1 Vote Aggregation

Aggregation takes place in three stages. First, after voting concludes, election staff count votes at individual polling centers. Polling centers contain several polling substations. There are typically four substations in a polling center. For example, a polling center might be a school, and polling substations are classrooms set up as polling locations inside of the school. Counting is overseen at each polling center by a Polling Center Manager.[12] The candidate totals for each substation are recorded on a single Declaration of Results form. Second, copies of the results forms are then sealed in a tamper-evident bag and sent to a Provincial Aggregation Center. After the count, the ballots are returned to the boxes, and the boxes are stored locally and are not transmitted to the Provincial Aggregation Center.[13] Changing the Declaration of Results forms is therefore all that is necessary to manipulate the aggregation process. Separate copies of each Declaration of Results form are also posted on the outside of the polling center for public viewing. In the final stage, results forms are collected at the National Aggregation Center in Kabul and combined to produce a national total. Figure 1 summarizes the aggregation process.

3.2 Measuring Fraud

We measure fraud by taking photographs of the Declaration of Results form prior to aggregation, and comparing this record to the corresponding vote total after aggregation. We compare at the level of individual candidates at specific polling centers. Figure 2 illustrates the method. Our research team took the picture on the left at a polling center in the field the morning after election

[12]Polling Center Managers are the most senior Independent Elections Commission official at a polling center. They maintain responsibility for opening their center on election day, conducting the vote, closing the polling center, overseeing the count, and posting the final returns form from each substation in a visible location within the polling center.

[13]In most cases, boxes are stored at one pre-designated site in each of the 398 districts in Afghanistan

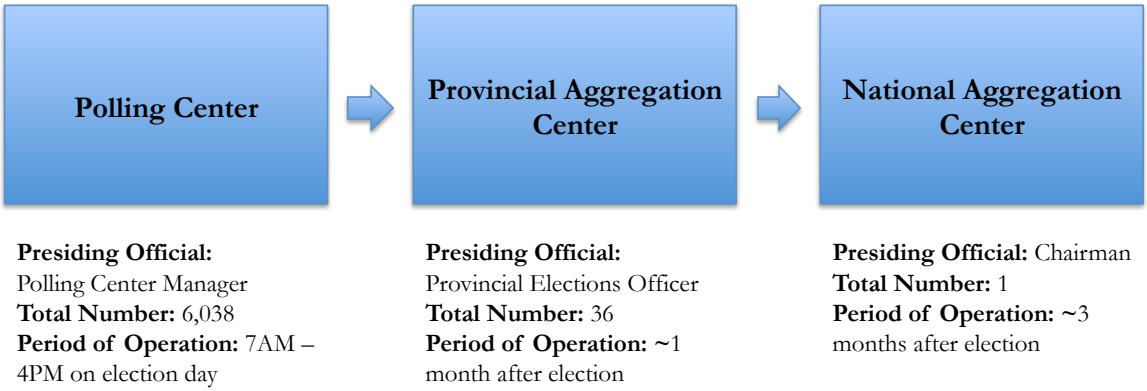


Figure 1: The Aggregation Process

day. The scan on the right was taken at the national aggregation center in Kabul about one month later. The picture on the right should be of a carbon paper copy of the form on the left and so they should be identical. Nonetheless, we find three major differences.

First, someone has converted the Dari script for the polling center and polling substation numbers into arabic numerals. Second, the name of the polling center manager has changed. Last, the sheet on the left records votes for several candidates and appears to result from normal polling while the figure on the right records no votes whatsoever.

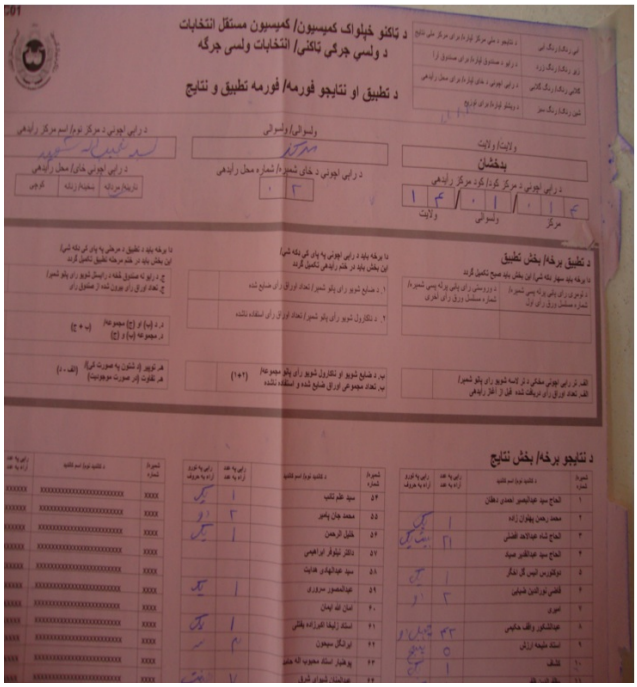
To record these differences we require both a picture and post-election data on votes disaggregated by candidate and polling substation, which we obtained from a scrape of the election commission website on October 24, 2010.[14] We hand-coded 48,871 vote entries for 1,784 different candidates at 347 polling substations.[15] Of these observations, we have corresponding data from our web scrape for 48,018 entries at 341 polling substations. These 341 polling substations were contained in 149 distinct polling centers in our experimental sample.

Of the 48,018 candidate polling substation observations, 5,308 (11.05 percent) record some difference during aggregation. This is 37.51 percent of the 14,152 polling center candidate observations with positive votes prior to aggregation. We note that this reflects a highly selected sample. As we

[14]Web scraping involves collecting, downloading, and structuring .html data which is available on the internet but not in a form ready for analysis. We obtained the earliest possible returns in order to isolate the effects of our treatment from the many readjustments that were made during a year long arbitration process.

[15]We had data for 20 percent of our polling stations independently double-entered to try to minimize error associated with varying picture quality. During double entry we found mistakes for only five candidate polling substation observations.

Panel A: Election Returns Form at the Polling Center



Panel B: Election Returns Form at the National Aggregation Center

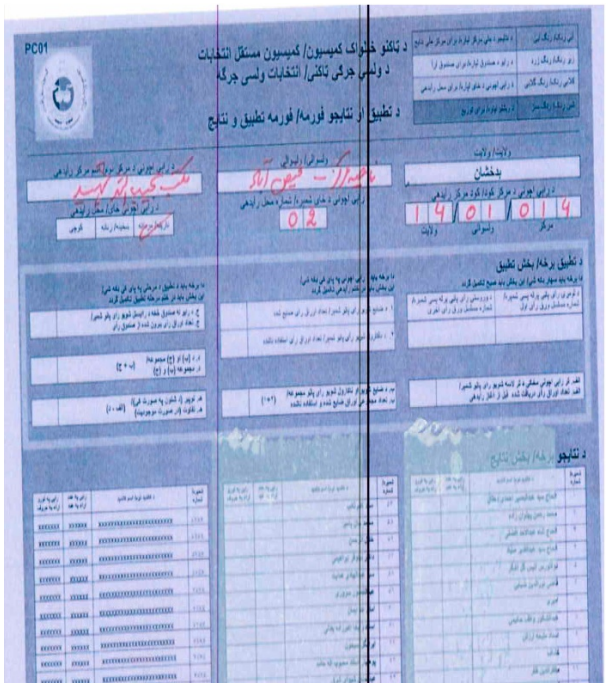


Figure 2: Election Returns Form for the Same Polling Center Before and After Aggregation

discuss in Section 5 below, at many polling substations these records were either not posted, torn down, or removed. If sheets are removed from polling centers where candidates anticipate adding votes, our data will report less fraud than actually occurred during the election.

3.3 Patterns of Fraud

There are several ways a candidate might adjust votes during the aggregation process. They might simply add votes to their total without adjusting votes for other candidates. Alternatively, they might cancel votes for competitors or move votes from their competitors' total to their own total. To gain a sense of how this is done, we examine whether votes or only added, subtracted, or some combination across all candidates on a given Declaration of Results form. Table 1 describes the frequency of five different patterns of fraud.

In the majority of cases (37.2 percent), candidates add votes while simultaneously subtracting from competitors. It is also common for candidates to just add votes, leaving their competitors totals unaltered (20.5 percent of cases). Adding and subtracting in equal measure is less common

(4.4 percent of cases) as is simply subtracting votes (2.9 percent of cases). Only 22 percent of the polling substations in our sample record no change whatsoever, indicating that aggregation fraud may be a serious problem.

Table 1: Vote Addition Patterns

Pattern:	Number of Polling Substations	Share of Sample	Mean Vote Difference
No Fraud	74	21.7%	0.00
Adding votes only	70	20.5%	47.34
Subtracting votes only	10	2.9%	-136.00
Adding and subtracting equally	15	4.4%	0.00
Adding more than subtracting	127	37.2%	83.45
Subtracting more than adding	45	13.2%	-54.13

Notes: Sample consists of 341 polling substations for which both pre-aggregation and post-aggregation data are available and where not all post-aggregation candidate vote totals at the substation are equal to zero. The Vote Difference is calculated for each polling substation as the sum of differences between post-aggregation votes and pre-aggregation votes for all candidates on the ballot at a given polling substation.

3.4 Political Connections and Aggregation Fraud

Political connections, particularly to officials in charge of aggregation, may facilitate fraud. To access and alter Declaration of Results forms, candidates need some means of accessing them. We examine whether votes for politically connected candidates are more likely to be altered using data from systematic investigations of candidates' political histories.[16] The investigations report connections for 76 of the leading candidates since the Soviet Invasion of Afghanistan in 1979. Of these, 57 candidates are represented in our data. Table 2 provides summary statistics for the political connections data used in this paper.

To examine the role of connections, we run regressions of the form:

$$Y_{ijs} = \alpha + \beta\ Connection_i + \gamma_j + \varepsilon_{is}. \tag{1}$$

Y_{ijs} is the difference in the number of votes before and aggregation for candidate i at polling

[16]These data were generously provided by Democracy International.

Table 2: Summary Statistics for Political Connections Data

Variable	Mean	Std. Dev.
Connected to Provincial Aggregator (=1)	0.491	0.504
Connected to Provincial + District Aggregator (=1)	0.228	0.423
Served in Senior Post Since 2001 (=1)	0.614	0.491
Served in Junior Post Since 2001 (=1)	0.158	0.368
Government Service (=1)	0.772	0.423
Connected Directly to Karzai (=1)	0.298	0.462
Indirectly Connected to Karzai (=1)	0.281	0.453
Karzai Connection (=1)	0.579	0.498
# Observations	57	

Notes: Data on political connections are from background investigations of candidates political history over the period December 1979 - August 2010 commissioned by Democracy International. Data are available for 57 candidates running in the 19 electoral districts in which our experiment took place.

substation s in constituency j. $Connection_i$ is a connection for candidate i and γ_j are constituency (province) fixed effects. We consider connections to President Karzai and to district and provincial aggregators. We also check whether votes for incumbents and for candidates with some government service are more likely to be altered.

Vote totals for elite candidates are more likely to change during aggregation. In column (1) of panel A we see that votes for candidates connected to the provincial aggregator increase by an average of 2.52 votes at each polling substation. Column (2) shows that candidates with a connection to the provincial aggregator and district aggregator add about 3.53 votes at each polling substation. None of our 57 candidates are connected to the district aggregator but not the provincial aggregator, so we cannot estimate separate coefficients. Columns (3) - (5) show that connections to President Karzai, Government Service, and Incumbency also predict vote addition. In Column (6) we see that having a connection to the aggregator remains important, even after controlling for incumbency. We calculate standard errors for these estimates using the method of Cameron, Gelbach and Miller (2011), which allows for arbitrary correlation for a given candidate across polling locations and across candidates within a given polling center.[17]

Panel B repeats this analysis replacing the dependent variable with the change in vote shares

[17]These standard errors are more conservative than those clustered only at the candidate or only at the polling substation level.

during aggregation. The pattern of results is similar. Candidates connected to the provincial and district aggregator increase their vote share by about 0.8 percent. To provide a sense of the magnitude, a 0.8 percent vote share increase is enough to move a candidate with no votes at a polling station into the 89th percentile of all candidates listed at the station and into the 49th percentile of candidates receiving positive votes.[18]

We treat this exercise speculatively for three reasons. First, we have data on connections only for the most powerful candidates. The 57 investigated candidates in our sample add 1.87 more votes than uninvestigated candidates ($p = 0.056$) using the same specification reported in Table 3.[19] Political power is likely to be highly asymmetrically distributed across candidates and is concentrated in the subsample of 57 that we observe. Second, connections are likely correlated with other candidate attributes that facilitate fraud, and we observe only a very limited number of candidate characteristics making it difficult to rule out omitted variables. Last, we omit the five largest and smallest observations off the left-hand side variable. Our results are robust to dropping all but the three most negative observations, which are all at least 28.5 standard deviations away from the mean, but break down if these three outliers are included.

3.5 Photo Quick Count

This approach to recording fraud suggests a powerful monitoring technology. Taking independent photographic records of election returns forms prior to aggregation and comparing them to ex post results provides a precise measure of aggregation fraud.[20] This makes visible a type of fraud which is usually largely hidden. In the remainder of the paper, we document an experiment which manipulated whether or not election officials were aware that such measurements were being

[18] On average, there are 483 candidates listed at each of the polling stations in our sample and 93 candidates listed if we exclude Kabul from the sample. At a given polling station, on average 267.701 votes are cast (standard deviation = 175.410). Excluding Kabul from the sample, on average 293.683 votes are cast (standard deviation = 178.285).

[19] The corresponding standard error is 0.980.

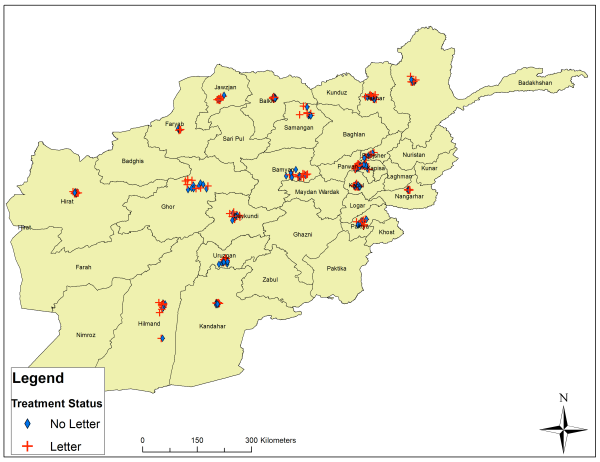
[20] This design builds on Parallel Vote Tabulations (PVTs), which have been in use since the 1980s. Through representative sampling and recording of ballots by field staff, PVTs predict national totals within a small margin of error (Cowan, Estok and Nevitte 2002), but do not make polling center specific comparisons. Two important technological developments allow us to build on the PVT concept. First, it is now common for election commissions to post disaggregated results on the internet. Second, the cheap availability of digital photography allows rapid and accurate recording of returns forms.

Table 3: Vote Changes During Aggregation by Candidate Type

Dependant Variable:	Post-aggregation Votes - Pre-aggregation Votes						
Panel A - Votes	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Provincial Aggregator Connection (=1)	2.522**						
	(1.226)						
Prov. + District Aggregator Connection (=1)		3.530**				3.347**	2.785
		(1.376)				(1.353)	(1.746)
Karzai Connect. (=1)			1.540**				0.309
			(0.723)				(1.721)
Government Service (=1)				1.476			0.442
				(1.217)			(2.428)
Incumbent (=1)					0.462**	0.333	0.268
					(0.227)	(0.204)	(0.228)
Constant	0.110***	0.110***	0.105***	0.105***	0.090**	0.095***	0.096***
	(0.037)	(0.037)	(0.037)	(0.037)	(0.037)	(0.037)	(0.037)
R-Squared	0.012	0.013	0.011	0.011	0.011	0.013	0.013
# Candidates	1783	1783	1783	1783	1783	1783	1783
# Polling Centers	149	149	149	149	149	149	149
# Candidate - Polling Substation Observations	48008	48008	48008	48008	48008	48008	48008
Dependant Variable:	(Post-aggregation Vote Share - Pre-aggregation Vote Share) x 100						
Panel B - Vote Shares	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Provincial Aggregator Connection (=1)	0.427						
	(0.286)						
Prov. + District Aggregator Connection (=1)		0.818***				0.771***	0.453
		(0.260)				(0.261)	(0.372)
Karzai Connect. (=1)			0.432*				-0.040
			(0.247)				(0.549)
Government Service (=1)				0.528			0.427
				(0.321)			(0.686)
Incumbent (=1)					0.089	0.058	0.022
					(0.064)	(0.062)	(0.072)
Constant	-0.001	-0.001	-0.002	-0.002	-0.004	-0.003	-0.003
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
R-Squared	0.002	0.002	0.001	0.002	0.001	0.002	0.002
# Candidates	1783	1783	1783	1783	1783	1783	1783
# Polling Centers	149	149	149	149	149	149	149
# Candidate - Polling Station Observations	47480	47480	47480	47480	47480	47480	47480

Notes: *Level of significance*: $*p < 0.1$, $**p < 0.05$, $***p < 0.01$. Standard errors clustered by candidate and by polling center using the method of Cameron, Gelbach and Miller (2011) are reported in parentheses. All specifications include province fixed effects. Data on political connections are from background investigations of candidates' political history over the period December 1979 - August 2010. Data are available for 57 candidates running in the 19 electoral districts in which our experiment took place. The five largest and smallest observations of the dependent variable are dropped. Three polling stations where votes for all candidates are equal to zero are dropped. No candidates record a connection to the district aggregator and not to the provincial aggregator precluding estimation of separate impacts.

Panel A: National Sample



Panel B: Kabul Subsample

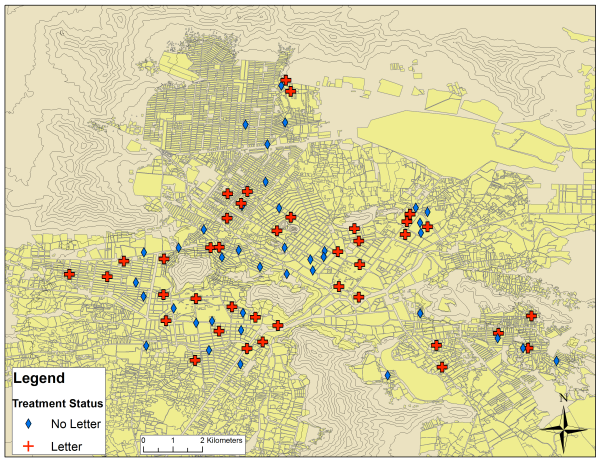


Figure 3: Experimental Sample of Polling Centers

recorded.

4 Experiment

4.1 Experimental Setting

During the period of our study, Afghanistan was an active warzone. To keep our field staff safe, we selected polling centers that met three safety criteria: (i) achieving the highest security rating given by the International Security Assistance Force (ISAF) and the Afghan National Police (ANP); (ii) being located in a provincial center, which are much safer than rural areas; and (iii) being scheduled to operate on election day by the Independent Elections Commission. Figure 3 maps the polling centers in our national sample in Panel A and in Kabul only in Panel B. Our experimental sample comprises 471 polling centers (7.8 percent of polling centers operating on election day) in 19 of the 34 provincial capitals in Afghanistan.

4.2 Experimental Intervention

On election day (September 18, 2010), we randomly announced the use of photo quick count by delivering letters to 238 of the 471 polling centers in our experimental sample. We call this

treatment our "Letter Treatment." Appendix Figure A1 provides an English translation of the letter and Appendix Figure A2 provides the Dari translation. We instructed our Afghan field staff to deliver letters to Polling Center Managers after 10AM and before polling concluded at 4PM. Staff visited all 471 polling centers the following day in order to take a picture of the election returns form.[21]

The letter announced to Polling Center Managers that researchers would photograph election returns forms the following day (September 19) in order to document discrepancies arising during aggregation. Two points about the experimental protocol bear emphasis. First, if we had not notified managers of monitoring on election day, they would have been unaware of our treatment as no election staff should be present at the polling center on the day after the election. Correspondingly, our staff report encountering election officials while they were taking photographs at only 2 of our 471 polling centers. Second, the experimental sample was known only to the research team. Polling Center Managers in the treatment group were informed of their status, but no election officials had a means of determining which sites we had selected as controls.

We asked Polling Center Managers to acknowledge receipt by signing the letter. Managers at seventeen polling centers (seven percent of centers receiving letters) refused to sign. We designate a polling center as treated if the manager received a letter (Letter Treatment = 1). Our results remain robust to redefining treatment as both receiving and signing a letter.

4.3 Assigning Treatment

To inform our treatment assignment, we fielded a baseline survey of households living in the immediate vicinity of 450 of the polling centers in our experimental sample a month before the election (August 2010). On election day, we added 21 polling centers in Kabul after obtaining additional funding.[22] We do not have baseline survey data for these 21 polling centers and so place them all

[21]Declaration of Returns forms were posted at the conclusion of the count around 9PM on election day. We determined that keeping our field staff out this late was unsafe.

[22]The survey contained 2,904 respondents. To attempt to obtain a representative sample of respondents living near polling centers, enumerators employed a random walk pattern starting at the polling center, with random selection of every fourth house or structure. Respondents within households are randomly selected using Kish grid. The survey had 50 percent male and female respondents each and enumerators conducted it in either Dari or Pashto.

in a single strata when assigning treatment.[23]

To ensure balance, we stratify treatment on province. In the 450 polling centers for which we had baseline data, we also stratify on the share of respondents from the baseline survey reporting at least occasional access to electricity and on respondents reporting that the district governor carries the most responsibility for keeping elections fair. We estimate all core specifications both with and without stratum fixed effects.[24] Table 4 reports summary statistics and verifies balance and Table A2 provides summary statistics for the remaining variables used in the analysis.

5 Data and Results

We examine the impact of announcing photo quick count on three outcomes. The first is the direct aggregation fraud measure discussed in Section 3, which is constructed as the absolute value of the difference between votes before and after the aggregation process. This measure is subject to substantial non-random attrition. We therefore rely on two additional proxy measures of fraud available for most of the experimental sample: the number of votes cast for elite candidates and primary reports that materials were stolen or damaged by local candidate representatives.

5.1 Aggregation Fraud:

We collected pictures of 204 (25 percent) of the 816 Declarations of Results forms that should have been posted at treatment polling centers and 143 (17.33 percent) of the 825 forms that should have been posted at control polling centers.[25] Treatment significantly increased the availability of Declarations of Results forms ($p = 0.064$).[26] We therefore estimate impacts on our direct measure of aggregation fraud using the method of Lee (2009).

The purpose of our treatment was to provide incentives to election officials to ensure that post-

[23] An alternative is to drop these 21 polling centers from specifications with district fixed effects reflecting the lack of baseline survey data to stratify them on. All reported results are robust to this change.

[24] Bruhn and McKenzie (2009) suggest stratifying treatment assignment on baseline measurements of key outcomes to increase power. Because measures of fraud are unavailable prior to the election, we select our stratifying variables by identifying measures most highly correlated with fraud during the 2009 presidential election in a national sample.

[25] This leaves a sample of 149 polling centers with pictures of at least some forms.

[26] The treatment effect is -0.052 (standard error = 0.028).

Table 4: Randomization Verification

	Control	Treatment	T-C	p-value
	(1)	(2)	(3)	(4)
Plans to turnout during election (=1)	0.788	0.797	0.009	0.682
	[0.237]	[0.232]	(0.022)	
Believes vote is secret (=1)	0.664	0.650	-0.014	0.561
	[0.267]	[0.255]	(0.025)	
Candidate will know how I voted (=1)	0.088	0.090	0.002	0.868
	[0.147]	[0.153]	(0.014)	
Can identify sitting MP (=1)	0.372	0.386	0.013	0.664
	[0.327]	[0.318]	(0.031)	
People in precinct will vote for same cand. (=1)	0.238	0.249	0.010	0.673
	[0.253]	[0.258]	(0.024)	
Problems with ballot transport are likely (=1)	0.533	0.534	0.001	0.974
	[0.304]	[0.302]	(0.029)	
Police in PC help security (=1)	0.738	0.737	-0.000	0.987
	[0.237]	[0.241]	(0.023)	
People like you are threatened to vote one way (=1)	0.217	0.202	-0.015	0.482
	[0.232]	[0.223]	(0.022)	
Local violence likely on elect. day (=1)	0.501	0.483	-0.018	0.570
	[0.317]	[0.347]	(0.032)	
MP Candidate from same Qawm (=1)	0.233	0.232	-0.001	0.973
	[0.221]	[0.227]	(0.021)	
Trad. auth. helps settle disputes (=1)	0.287	0.293	0.006	0.800
	[0.267]	[0.240]	(0.024)	
Pashtun (=1)	0.326	0.318	-0.008	0.830
	[0.388]	[0.407]	(0.038)	
Tajik (=1)	0.426	0.433	0.007	0.858
	[0.383]	[0.390]	(0.037)	
Income generating activity (=1)	0.602	0.607	0.005	0.793
	[0.198]	[0.192]	(0.019)	
Electrified (=1)	0.726	0.706	-0.020	0.491
	[0.300]	[0.323]	(0.030)	
District Governor keeps elect. fair (=1)	0.111	0.114	0.004	0.814
	[0.170]	[0.169]	(0.016)	
Visited by international election monitors (=1)	0.144	0.174	0.030	0.380
	[0.350]	[0.378]	(0.034)	
Visited by domestic election monitors (=1)	0.885	0.849	-0.037	0.245
	[0.319]	[0.359]	(0.032)	
Indelible ink washes or not available (=1)	0.789	0.744	-0.045	0.255
(pre-treatment)	[0.409]	[0.438]	(0.039)	
# Observations	227	238		

Notes: Standard deviations reported in brackets and standard errors reported in parentheses. Data on election monitoring visits are provided by Democracy International and data on ink in polling centers are from the Free and Fair Elections Foundation Afghanistan. Remaining variables are from on 2,904 responses to baseline interviews performed during August 2010 in 450 of the 471 polling center precincts in our experiment sample. Randomization was stratified on province and on shares of respondents reporting some electricity and that the District Governor keeps elections fair.

aggregation results corresponded to their pre-aggregation counterparts. Given this objective and our finding in Section 3 that votes are both commonly added and subtracted, we use the absolute value of differences between pre-aggregation and post-aggregation vote totals as our outcome measure. Table 5 reports both untrimmed effects, and lower and upper bounds on the treatment effect. The control means, reported in Column (4), indicate that aggregation fraud is higher for politically connected candidates, consistent with Table 3. Column (5) reports untrimmed estimates, which are all negative but not statistically different from zero. Column (6) reports the lower bound and column (7) reports the upper bound.

Each of the bounds reflect a separate assumption about the part of the distribution revealed by treatment. The lower bound, which corresponds to the largest negative impact on fraud, assumes that treatment revealed the lower 35 percentiles of the treatment distribution. This could happen if treatment caused election officials to decide both to post Declarations of Results forms and to not intervene in the aggregation process.[27] Alternatively, this might reflect officials being induced to post tallies in locations where they never had any intention of rigging. The trimming ratio is large enough that removing this part of the distribution produces estimates consistent with eliminating fraud entirely in the observed treatment sample. The upper bound, which corresponds to the smallest impact on fraud, assumes that treatment revealed the upper 35 percentiles of the treatment distribution. This assumption would correspond to a situation in which treatment caused officials to post the returns forms, but did not dissuade them from manipulating the aggregation process. The point estimates for the upper bound are negative in all but one case, but not statistically different from zero.

5.2 Votes for Elite Candidates:

We next estimate effects on votes for elite candidates. This measure has the benefit of much less treatment-related attrition, but provides a less precise reflection of fraud than our picture-based measure. This approach follows the existing literature on the impact of election monitoring (Hyde 2007). We obtained data on votes disaggregated by candidate and polling substation from a scrape

[27] They might also inform their superiors in the election commission not to intervene in the process.

Table 5: Trimmed Estimates of Effect on Aggregation Fraud

	Selected Observations	Selected Polling Centers	Trimming Proportion	Control Mean	Untrimmed Effect	Lower Bound	Upper Bound
Sample:	Absolute Value of Vote Differences						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Full Sample	48,018	149	0.349	0.817***	-0.236	-0.817***	0.076
				(0.234)	(0.196)	(0.196)	(0.272)
Incumbent	3,205	149	0.003	2.840***	-1.242	-1.632*	-1.238
				(0.830)	(0.885)	(0.851)	(0.886)
Most Connected Candidate	346	149	0.265	10.310*	-6.511	-10.310*	-5.143
				(5.826)	(5.983)	(5.830)	(6.107)
Provincial Aggregator Connection	255	72	0.299	17.170***	-11.686	-17.170**	-9.372
				(8.020)	(8.251)	(8.030)	(8.448)
Prov. + District Aggregator Connection	206	60	0.295	18.790*	-13.030	-18.790*	-10.700
				(9.684)	(9.961)	(9.698)	(10.154)
Karzai Connection	546	128	0.309	8.831**	-5.164	-8.831**	-3.549
				(3.920)	(4.047)	(3.922)	(4.170)
Government Service	699	145	0.291	9.665***	-4.540	-9.652***	-2.448
				(3.215)	(3.402)	(3.217)	(3.544)

Notes: *Level of significance*: $*p < 0.1$, $**p < 0.05$, $***p < 0.01$. Standard errors clustered at the polling center level reported in parentheses. Vote differences are calculated by comparing data from pictures of declaration of results forms with results posted on the Independent Election Commission website on October 24, 2010. These are available for 341 polling substations within 149 polling centers. Data on political connections are from background investigations of candidates political history over the period December 1979 - August 2010 commissioned by Democracy International.

of the election commission website on October 24, 2010. During the scrape, 98 of the 1,977 polling substations in our experimental sample (4.96 percent) had not yet posted returns. Missing data are not predicted by treatment status ($p = 0.439$). We run regressions of the form:

$$Y_{ic} = \beta_1 + \beta_2 Letter\ Treatment_c + \beta_3 Letter\ Treatment_c\ *\ Connection_i + \boldsymbol{\beta}_4' \mathbf{X}_c + \varepsilon_{ic}, \qquad (2)$$

where Y_{ic} is votes case for candidate i in polling center c, $Connection_i$ is a dummy variable equal to one for candidates with a specific type of political connection, and $\mathbf{X}_c$ is a matrix containing covariates from our baseline survey and a set of stratum fixed effects.

To succinctly summarize impact, we also identify highly influential candidates using an index based on our political connections data. We identify one elite candidate in each of the 19 political constituencies by constructing the following index from the data on political connections described in Section 3:

$$Index_i = Karzai_i + Government_i + DEO_i + PEO_i.$$

$Karzai_i$ equals 1 for a candidate i with an indirect connection to Karzai (e.g., through a relative) and 2 for a direct connection (e.g., serving directly with the president), $Government_i$ equals 1 for

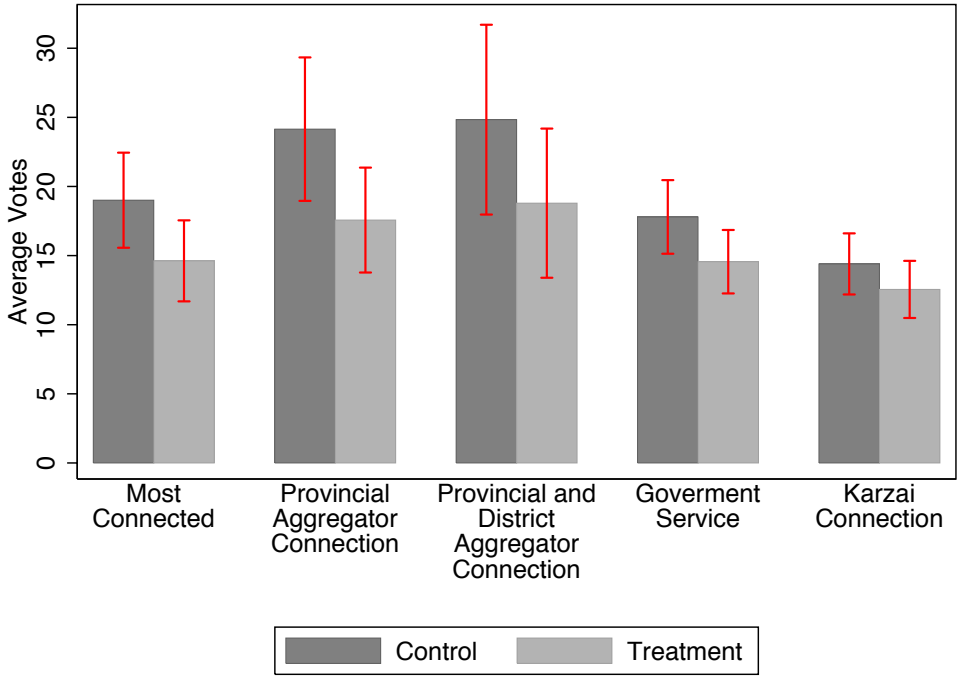


Figure 4: Treatment Effects by Candidate Connection

Notes: 95 percent confidence intervals depicted.

holding a minor government post since 2001 (e.g., teacher) and 2 for holding a major government post (e.g., parliamentarian), DEO_i equals 1 when connected to the District Elections Officer, and PEO_i equals 1 when connected to the Provincial Elections Officer. We term the candidate with highest index score who is also among the top 10 vote recipients in control polling centers as the"most connected candidate." Figure 4 depicts average votes in treatment and control polling centers for each type of candidate connection.

Column (1) Panel A of Table 6 reports the impact on treatment for all candidates, finding no evidence of effect across all candidates. Columns (2) - (5) reports effects interacting treatment with an indicator for the most connected candidate using several different specifications. In columns (2) - (4) we see that treatment reduced votes for most connected candidates from an average of about 20 votes to about 14.5 votes (a reduction of about 25 percent). As in column (1), there is no evidence of effect on the remaining non-elite candidates. Column (5) reports estimates trimming the top one percent of observations. We trim the the top one percentile of votes for the interacted candidate

type. The most connected candidates are typically among the very highest vote recipients. We trim to ensure that our effects are not driven by a few extreme outliers. Removing these observations both lowers the number of votes powerful candidates received in controls and reduces the estimated treatment effect by about one vote, though effects remain significant. Panel B of Table 6 provides the full set of interacted estimates. We find that treatment had a negative effect for candidates with connections to the Provincial Aggregator in Column (2) and for candidates with a history of government service (a category which includes incumbents).

Adding covariates causes us to lose 25 polling centers from our sample. We lose 21 polling centers in Kabul because they were not surveyed at baseline and we lose an additional four polling centers because no respondent in these locations responded to our question about whether they expect violence on election day. Table A3 checks robustness to estimating the specifications in panel A when the sample is restricted to these 436 polling centers for all specifications. We also report impact on vote shares in Table A4.

5.3 Theft and Damaging of Forms:

On the day after the election, our field staff visited all 465 operating polling centers in the experimental sample. During the visit, they attempted to photograph returns forms. If the forms were missing, they investigated whether any of the materials had been stolen or damaged during the night of the election.[28] Investigations involved interviewing residents living in the immediate vicinity of polling centers.[29] In this section, we estimate impacts on forms reported to be stolen or damaged by candidate agents, who are candidate proxies legally permitted to observe polling and typically present at most polling centers in their candidate's constituency. Typically, these are confidants of the candidate who play a role at all stages of the campaign. Candidate agents stole

[28]These investigations produce 44 reports of candidate agents stealing the returns form along with the ballot boxes and other election materials, 18 reports of candidate agents merely tearing down the returns form, 15 reports of citizens stealing returns forms, 17 reports of citizens tearing down returns forms, and 28 reports of security officials stealing materials or denying our interviewers access to photograph them.

[29]While election commission staff should have vacated the polling center at the end of election day, we trained our staff to investigate by only interviewing local community members and not to engage commission staff so as to not create a measurement effect. While this would not affect the internal validity of our estimates of program effect, our aim was to minimize the additional monitoring effect for the entire sample. These data merit some caution as our field staff could only rely on reports of nearby citizens to determine the reason that Declaration of Returns forms are missing.

Table 6: Impacts on Total Votes by Candidate Connection

Dependent Variable:	Votes				
Panel A - Impacts on Most Connected Candidates	(1)	(2)	(3)	(4)	(5)
Letter Treatment (=1)	-0.066	-0.034	0.030	0.020	-0.033
	(0.212)	(0.196)	(0.045)	(0.056)	(0.054)
Treat x Most Connected		-5.430*	-5.392*	-5.529*	-4.586*
		(3.111)	(3.080)	(3.254)	(2.358)
Most Connected (=1)		20.871***	18.604***	19.422***	16.663***
		(2.391)	(2.364)	(2.494)	(1.798)
Constant	1.410***	1.301***	1.279***	1.972***	1.818***
	(0.156)	(0.144)	(0.032)	(0.119)	(0.116)
Stratum FEs	No	No	Yes	Yes	Yes
Full Covariates	No	No	No	Yes	Yes
Trimming top 1% of votes for interacted candidate type	No	No	No	No	Yes
R-Squared	0.000	0.024	0.079	0.077	0.094
# Polling Centers	461	461	461	436	436
# Candidate - Polling Station Observations	386855	386855	386855	309377	309254
Dependent Variable:	Votes				
Panel B - Impacts by Connection Type	(1)	(2)	(3)	(4)	(5)
Letter Treatment (=1)	-0.009	-0.025	-0.014	-0.042	0.028
	(0.055)	(0.056)	(0.054)	(0.051)	(0.056)
Treat x Provincial Aggregator Connection	-6.509**				
	(3.004)				
Treat x Prov. and District Aggregator Connection		-6.141			-2.789
		(4.180)			(6.230)
Treat x Government Service			-3.480**		-3.962
			(1.751)		(4.907)
Treat x Karzai Connection				-1.908	1.675
				(1.497)	(4.800)
Provincial Aggregator Connection (=1)	20.187***				
	(2.446)				
Prov. and District Aggregator Connection (=1)		20.632***			10.629**
		(3.373)			(4.772)
Government Service (=1)			15.706***		19.508***
			(1.346)		(3.312)
Karzai Connect. (=1)				12.332***	-4.473
				(1.101)	(3.194)
Constant	1.890***	1.953***	1.739***	1.639***	1.858***
	(0.120)	(0.120)	(0.116)	(0.106)	(0.119)
Stratum FEs	Yes	Yes	Yes	Yes	Yes
Full Covariates	Yes	Yes	Yes	Yes	Yes
Trimming top 1% of votes for interacted candidate type	Yes	Yes	Yes	Yes	No
R-Squared	0.092	0.079	0.108	0.103	0.099
# Polling Centers	436	436	436	436	436
# Candidate - Polling Substation Observations	309324	309331	309284	309131	309377

Notes: *Level of significance*: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. Robust standard errors clustered at the polling center level are reported in parentheses. The full covariates are the share of respondents reporting that they are Pashtun, Tajik, who anticipate violence on election day, and whether the polling center was visited by international election monitors. The procedure for identifying the Most Connected candidate is described in Section 5.

or damaged materials at 62 (13.33 percent) of the 465 operating polling centers.

There are several reasons that stealing or damaging tallies may reflect an intention to change vote totals during aggregation. Reports provided by the Electoral Complaints Commission indicate that the purpose of stealing the materials was to take them to a separate location, alter them, and then reinsert them into the aggregation process. For example, at the Sayedullah Khan Bazaar High School in Terin Kot in Urozgan province, a candidate reports: "382 votes were cast, but then the voting papers were inexplicably lost. Later that evening, I observed the brother of Sema Joyenda replacing the vote papers into the boxes." Alternatively, candidates might seek to destroy all evidence of the polling center count, and then manufacture an entirely new returns forms. Correspondingly, an empowered Polling Center Manager, who knows that the absence of forms will be photographically documented, might stand up to agents seeking to remove election materials. While we lack data to know specifically how this happens, a reduction in this measure may correspond to a reduction in fraud. Table 7 provides several specifications estimating effects on this measure. In all specifications, we find that the effect of treatment was to reduce this specific type of theft from 18.9 percent in controls to about 8 percent in controls (a reduction of 60 percent).

Table 7: Impacts on Form Theft

Dependent Variable:	Election Returns Form Damaged (=1)				
	(1)	(2)	(3)	(4)	(4a)
	OLS	OLS	OLS	Probit	$\partial y/\partial x$
Letter Treatment (=1) (d)	-0.110***	-0.109***	-0.109***	-0.544***	-0.110***
	(0.031)	(0.030)	(0.032)	(0.157)	(0.032)
Constant	0.189***	0.189***	0.194**	-0.739***	
	(0.026)	(0.024)	(0.086)	(0.209)	
Stratum FEs	No	Yes	Yes	No	
Full Covariates	No	No	Yes	No	
R-Squared [Log-Likelihood]	0.026	0.218	0.229	[164.168]	
# Observations	465	465	441	441	441

Notes: *Level of significance*: *$p < 0.1$, **$p < 0.05$, ***$p < 0.01$. Robust standard errors are reported in parentheses. Sample sizes are smaller in columns (2) - (4) asd we do not have pre-election covariates for 21 polling centers in Kabul added to the experimental sample on election day. The full covariates are the share of respondents who are Pashtun, Tajik, who anticipate violence on election day, and whether the polling center was visited by international election monitors.

5.4 Tests for spatial externalities

We next turn to tests for spatial externalities. We do this for three reasons. First, treatment externalities may confound our estimates of program effect, leading us to overstate impact if fraud is merely displaced and to understate impact if fraud is reduced in neighboring polling centers because of a "chilling effect" (Miguel and Kremer 2004).[30] Second, displacement effects and "chilling effects" should be factored in when considering the efficacy of photo quick count. Last, tests for spatial externalities can provide some information about how aggregation fraud is perpetrated.

The tests in this section are necessarily speculative. An ideal design allows an explicit comparison between various treatment densities against a set of pure controls. We could not achieve this for several reasons. For example, we could not treat rural polling centers, which comprise the majority of polling centers, due to safety concerns.[31]

A simple, but imperfect, test for externalities is to compare votes for the most connected candidate in control polling substations which have no treated neighbors within a two kilometer halo ($N = 196$) and in the remaining set of controls which have some treated neighbors within two kilometers ($N = 704$). We find that the average number of votes for the most connected candidates in the first group (42.939) is much larger than in the remaining controls (17.784) and that this difference is statistically significant ($p = 0.004$, clustering standard errors at the polling center level).

To develop this further, we estimate treatment externalities with the specification:

$$Y_{ic} = \varphi_1 + \varphi_2 Letter\ Treatment_c + \varphi_3 Treated_c^{1km} + \varphi_4 Total_c^{1km}$$
$$+ \varphi_5 Treated_c^{1-2km} + \varphi_6 Total_c^{1-2km} + \boldsymbol{\varphi}_7' \mathbf{X}_c + \eta_{ic}. \quad (4)$$

[30] Because candidates run "at large" within a province, they may attempt substitution of legitimate and fake ballots anywhere within a province. Announcing monitoring in any polling center may therefore create treatment externalities for other polling centers in a province. In practice, however, candidates may face limits to displacing votes across polling substations within a province. Candidates mostly garner their votes in their home districts or towns where they remain popular, or from pockets of spatially clustered family members. For example, given the extreme ethnic segregation of neighborhoods in Afghanistan, a Tajik candidate receiving a considerable number of votes in a solidly Pashtun part of a province could raise immediate suspicions of fraud.

[31] Additionally, with only 34 electoral constituencies, the Afghan electoral system affords limited power for tests at the constituency level.

Y_{ic} is the number of votes for the most connected candidate at polling center i in polling center c, $Treated_c^{1km}$ is a dummy equal to 1 if any neighbors of polling center c within 1 km are treated, $Total_c^{1km}$ is the total number of polling centers within a one kilometer halo, and variables are similarly defined for polling centers between one and two kilometers away. As in Miguel and Kremer (2004), our identifying assumption is that, conditional on the number of polling centers within a fixed halo, the number treated is random. Table A5 reports tests verifying this identifying assumption. We additionally estimate several variants of Specification 4, providing the full set of interactions with *Letter Treatment* and separating $Treated_c^{1km}$ into a set of 5 dummy variables to test for nonlinear effects in local treatment saturations.[32]

To assess the extent to which externalities confound our estimates of program effect, the first column of Table 8 estimates impact only for the most connected candidate for comparison with columns (2) - (4), which control for spatial externalities. The estimate increases only slightly when controlling for spatial externalities, but remains around four fewer votes for the most connected candidate.[33] Column (2) provides evidence of a negative externality, consistent with a "chilling effect." The estimates in column (3) suggest that having a neighbor treated within one kilometer has a stronger negative externality (-6.68 votes) than having a neighbor treated between one and two kilometers away (-3.56 votes). Column (4) separates out the effects by the number of neighbors treated. Estimates here are imprecise, but they suggest that treatment externalities are decreasing in the number of neighbors treated.

[32]In our data, the maximum number of polling centers within a one kilometer radius is five, so we create categorical dummies for one treatment polling center within one kilometer, two treatment polling centers within one kilometer, and so on.

[33]The small change in the estimates of core impact despite large negative externalities in neighboring polling centers may be because own-treatment status is weakly correlated with the treatment status of nearby polling centers. To see this, imagine we estimate only $y_c = \beta T_c^{own} + \eta_c$, when $y_c = \beta T_c^{own} + \gamma T_c^{neighbor} + \epsilon_c$ is the true model and $cov(T_c^{own}, T_c^{neighbor}) \approx 0$. Then, since by a standard result $E[\hat{\beta}] = \beta + cov(T_c^{own}, T_c^{neighbor})\gamma$, $E[\hat{\beta}] \approx \beta$, even when γ is large. Intuitively, this is equivalent to saying that there are a large number of valid controls mixed in with the contaminated controls.

Table 8: Spatial Treatment Externalities

Dependent Variable:	Votes for the Most Connected Candidate			
	(1)	(2)	(3)	(4)
Letter Treatment (=1)	-4.065**	-4.152**	-4.246**	-4.125**
	(2.004)	(1.980)	(1.952)	(1.977)
Any PCs treated within 1km (=1)		-6.838**	-6.684*	
		(3.430)	(3.415)	
Total PCs within 1km		-0.549	-0.478	-1.196
		(0.568)	(0.567)	(0.797)
Any PCs treated within 1-2km (=1)			-3.562	-3.498
			(4.305)	(4.298)
Total PCs within 1-2km			0.063	0.181
			(0.385)	(0.399)
1 treated PC within 1km (=1)				-6.323*
				(3.546)
2 treated PCs within 1km (=1)				-6.231
				(3.782)
3 treated PCs within 1km (=1)				-3.022
				(4.727)
4 treated PCs within 1km (=1)				1.371
				(5.386)
5 treated PCs within 1km (=1)				-2.073
				(6.760)
Constant	31.170***	33.273***	34.735***	35.132***
	(6.443)	(6.425)	(7.404)	(7.386)
R-Squared	0.288	0.302	0.303	0.305
Trimming top 1% of votes for interacted candidate type	Yes	Yes	Yes	Yes
# Polling Centers	435	435	435	435
# Candidate - Polling Substation Observations	1827	1827	1827	1827
Mean Dep. Var. control + no treated PCs 0-2km	42.939	42.939	42.939	42.939

Notes: *Level of significance*: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. Robust standard errors clustered at the the polling center level reported in parentheses. The Most Connected Candidate is identified using the procedure described in Section 5. The full covariates are the share of respondents who are Pashtun, Tajik, who anticipate violence on election day, and whether the polling center was visited by international election monitors. All regressions include province and stratum fixed effects.

6 Conclusion

Our results demonstrate that aggregation fraud represents a threat to electoral fairness and that photo quick count provides a means of addressing the problem. Our data provide, to our knowledge, the first direct measurement of aggregation fraud and also the first systematic evidence of candidates using their political networks to infiltrate electoral institutions. We discuss three direct policy implications and three broader implications for electoral competition. We conclude with directions for future research.

Our data yield three actionable policy results. First, photo quick count is effective, scalable, well-suited to citizen-based implementation and "viral" adoption, and is cost-effective relative to traditional international election monitoring.[34] As cellular networks densify and bandwidth increases, the scalability of photo quick count is also likely to increase. Importantly, this approach may be sustainable with limited international support. The need for such interventions is likely to increase as developed countries transition to a "light footprint" approach to international engagement. Second, no matter how it is addressed, aggregation fraud appears to be a serious problem. Estimating the impact of aggregation fraud relative to other types of fraud lies beyond our data. Nonetheless, the sheer magnitude of the problem and the centrality of vote aggregation to the electoral process suggest that future efforts to improve elections should target this problem. Last, improving the independence of electoral institutions and ensuring that candidates cannot infiltrate them is a necessary condition in achieving fair elections.

Aggregation fraud, in our data, is both prevalent and disproportionately beneficially to connected candidates. This has at least three negative implications for electoral competition. First, this creates a substantial barrier to entry for unconnected candidates. We find evidence that powerful candidates can both add votes for themselves and subtract votes for contenders. In this situation, competitors without connections may be at a serious disadvantage. In extreme cases, they may not be able to win at all without these connections, regardless of their competence. Second, candidates have incentives to cultivate connections in order to win elections. This may create an incentive for

[34] Viral adoption refers to the adoption of new technology by independent actors based on widely available information. Since completing our study, civil society groups in several countries have begun to implement photo quick count.

candidates to favor clientielistic strategies relative to programmatic ones. Last, the prevalence of aggregation fraud fundamentally limits the ability of voters to express their preferences by casting votes. The candidate who wins may be the one with the strongest connections, not the one preferred by voters. This might limit the disciplining role of elections.

Our findings produce a set of questions for future research. First, do informal connections between state actors explain corruption and accountability failures in other settings, such as state service provision? Second, a natural extension of this research would be to investigate the longer term effects of fraud reduction on the effectiveness of government in improving social welfare and on citizens' attitudes toward government—an important consideration in states where government legitimacy is contested. Third, our paper suggests further work on institutional reforms that might improve the effectiveness and sustainability of government monitoring efforts. Finally, and perhaps more practically, our results suggest that identifying and operationalizing innovative uses of technology to quickly gather information on corruption, waste, and abuse is a promising direction for research.

References

Aker, Jenny, Paul Collier, and Pedro C. Vicente. 2010. "Is Information Power: Using Cellphones During an Election in Mozambique." Oxford University Working Paper.

Atanassova, Antonia, Marianne Bertrand, and Paul Niehaus. 2011. "Targeting with Agents." University of California San Diego.

Berman, Eli, Jacob N. Shapiro, and Joseph H. Felter. 2011. "Can Hearts and Minds Be Bought? The Economics of Counterinsurgency in Iraq." *Journal of Political Economy*, 119(4): 766 – 819.

Bertrand, Marianne, Simeon Djankov, Rema Hanna, and Sendhil Mullainathan. 2007. "Obtaining a Driver's License in India: An Experimental Approach to Studying Corruption." *The Quarterly Journal of Economics*, 122(4): 1639–1676.

Besley, Timothy, and Robin Burgess. 2002. "The Political Economy of Government Responsiveness: Theory and Evidence from India." *Quarterly Journal of Economics*, 117(4): 1415–1452.

Besley, Timothy, and Torsten Persson. 2009. "The Logic of Political Violence."

Besley, Timothy, Rohini Pande, and Vijayendra Rao. 2005. "Participatory Democracy in Action: Survey Evidence from South India." *Journal of the European Economic Association*, 3(2-3): 648–657.

Bruhn, Miriam, and David McKenzie. 2009. "In Pursuit of Balance: Randomization in Practice in Development Field Experiments." *American Economic Journal: Applied Economics*, 1(4): 200–232.

Cadot, Olivier. 1987. "Corruption as a Gamble." *Journal of Public Economics*, 33(2): 223–244.

Callen, Michael, and Nils Weidmann. 2013. "Violence and Election Fraud: Evidence from Afghanistan." *British Journal of Political Science*, 43(1): 53 – 75.

Cameron, A. Colin, Jonah B. Gelbach, and Douglas L. Miller. 2011. "Robust Inference With Multiway Clustering." *Journal of Business & Economic Statistics*, 29(2): 238–249.

Chattopadhyay, Raghabendra, and Esther Duflo. 2004. "Women as Policy Makers: Evidence from a Nationwide Randomized Experiment in India." *Econometrica*, 72(5): 1409–1443.

Cowan, Glenn, Melissa Estok, and Neil Nevitte. 2002. *The Quick Count and Election Observation.* National Democratic Institute for International Affairs.

Di Tella, Rafael, and Ernesto Schargrodsky. 2003. "The Role of Wages and Auditing during a Crackdown on Corruption in the City of Buenos Aires." *Journal of Law and Economics*, 46(1): 269–292.

Duflo, Esther, Rema Hanna, and Stephen Ryan. 2011. "Incentives Work: Getting Teachers to Come to School." Working Paper.

Ferraz, Claudio, and Frederico Finan. 2008. "Exposing Corrupt Politicians: The Effects of Brazil's Publicly Released Audits on Electoral Outcomes." *The Quarterly Journal of Economics*, 123(2): 703–745.

Ferraz, Claudio, and Frederico Finan. 2011. "Electoral Accountability and Corruption: Evidence from the Audits of Local Governments." *American Economic Review*, 101: 1274–1311.

Fisman, Raymond. 2001. "Estimating the Value of Political Connections." *American Economic Review*, 91(4): 1095–1102.

Fujiwara, Thomas. 2010. "Voting Technology, Political Responsiveness, and Infant Health: Evidence from Brazil." Mimeo, University of British Columbia.

Hyde, Susan D. 2007. "The Observer Effect in International Politics: Evidence from a Natural Experiment." *World Politics*, 60(1): 37–63.

Khwaja, Asim Ijaz, and Atif Mian. 2005. "Do Lenders Favor Politically Connected Firms? Rent Provision in an Emerging Financial Market." *Quarterly Journal of Economics*, 120(4): 1371–1411.

Lee, David S. 2009. "Training, Wages, and Sample Selection: Estimating Sharp Bounds on Treatment Effects." *Review of Economic Studies*, 76(3): 1071 – 1102.

Martinez-Bravo, Monica, Gerard Padró i Miquel, Nancy Qian, and Yang Yao. 2012. "Elections and Economic Policy: Evidence from Rural China."

McChrystal, Stanley. 2009. "COMISAF's Initial Assessment to the Secretary of Defense."

McGee, Rosie, and John Gaventa. 2011. "Shifting Power? Assessing the Impact of Transparency and Accountability Initiatives." Institute of Development Studies Working Paper.

Miguel, Edward, and Michael Kremer. 2004. "Worms: Identifying Impacts on Education and Health in the Presence of Treatment Externalities." *Econometrica*, 72(1): 159–217.

Olken, Benjamin A. 2007. "Monitoring Corruption: Evidence from a Field Experiment in Indonesia." *Journal of Political Economy*, 115(2): 200–249.

Olken, Benjamin A., and Patrick Barron. 2009. "The Simple Economics of Extortion: Evidence from Trucking in Aceh." *Journal of Political Economy*, 117(3): 417–452.

Olken, Benjamin A., and Rohini Pande. 2011. "Corruption in Developing Countries." National Bureau of Economic Research (NBER) Working Paper No. W17398.

Pande, Rohini. 2003. "Can Mandated Political Representation Increase Policy Influence for Disadvantaged Minorities? Theory and Evidence from India." *American Economic Review*, September.

Rashid, Ahmed. 2009. *Descent into Chaos: The U.S. and the Disaster in Pakistan, Afghanistan, and Central Asia.* London:Penguin.

Rose-Ackerman, Susan. 1975. "The Economics of Corruption." *Journal of Public Economics*, 4(2): 187 – 203.

Shleifer, Andrei, and Robert W. Vishny. 1993. "Corruption." *Quarterly Journal of Economics*, 108(3).

Svensson, Jakob. 2003. "Who Must Pay Bribes and How Much? Evidence from A Cross Section of Firms." *Quarterly Journal of Economics*, 118(1): 207–230.

United States Army. 2006. "Field Manual 3-24: Counterinsurgency."

World Bank. 2011. *World Development Report 2011: Conflict, Security, and Development. WDR.*

Yang, Dean. 2008. "Can Enforcement Backfire? Crime Displacement in the Context of Customs Reform in the Philippines." *The Review of Economics and Statistics*, 90(1): 1–14.

A Appendix

A.1 Impact on Problems During the Vote Count

After votes are cast on election day, the Polling Center Manager at each polling center is responsible for counting up votes and for completing a Declaration of Results form for each polling substation. We obtained data on problems during this process from the Electoral Complaints Commission. These include complaints about the electoral process made by candidates, observers, and candidate agents. Complaints indicating problems during the count occur widely in our sample. For example, a complaint made by a candidate about the Charahi Taymani neighborhood in Kabul reports "in Ismailya Polling substation, ten of my family members voted for me, but the Declaration of Results Form displayed only seven." The Electoral Complaints Commission received 5,869 total complaints regarding the September 2010 parliamentary elections, of which 4,138 were made by candidates and 944 were made about Independent Elections Commission polling officials violating protocols. 650 of the 944 complaints about polling staff were made by candidates. In our sample of 1,977 polling substations in the 465 operating polling centers, 1,847 complaints were filed with the Electoral Complaints Commission. 1,217 of these complaints were filed by candidates and 900 were filed regarding polling center staff. We assess impacts on two measures: (i) the number of complaints filed by candidates about a given polling substation; and (ii) the number of complaints filed against election commission staff about a given polling substation.

As the example given above suggests, these might reflect efforts by the Polling Center Manager to increase fraud during the count because photo quick count prohibits tampering later in the aggregation process. However, these measures are problematic for at least three reasons. First, we cannot verify these complaints. Second, while many of the translated complaints report candidates manipulating the counting process, complaints in these categories may also be filed for other reasons. Last, it may be that candidates who are filing complaints do so strategically to try to cancel out their competitors' votes. Moreover, the Letter Treatment might merely empower potential complainants. They might, for example, believe that the photograph of the Declaration of Results form will provide them a means to substantiate their claim.

Table A1: Impact on Complaints

Dependent Variable:	Complaints by Candidates			Complaints Against Polling Official		
Panel A	(1)	(2)	(3)	(4)	(5)	(6)
Letter Treatment (=1)	1.438**	1.406*	1.406*	0.898	1.052*	1.052*
	(0.716)	(0.750)	(0.750)	(0.614)	(0.588)	(0.588)
Constant	1.881***	1.727***	1.727***	1.476***	1.163***	1.163***
	(0.295)	(0.289)	(0.289)	(0.320)	(0.234)	(0.234)
Stratum FEs	No	Yes	Yes	No	Yes	Yes
Full Covariates	No	No	Yes	No	No	Yes
R-squared	0.008	0.152	0.152	0.005	0.206	0.206
# Observations	465	444	444	465	444	444

Notes: *Level of significance*: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. Robust standard errors are reported in parentheses. The full set of covariates is the share of respondents who are Pashtun, Tajik, who anticipate violence on election day, and whether the polling center was visited by international election monitors.

A.2 Data Appendix

We use the following administrative data: (i) systematic political background investigations of the main candidates; (ii) geographic coordinates and security assessments of polling substations provided by ISAF; (iii) complaints about illegal election activities filed at the Electoral Complaints Commission; (iv) disaggregated vote counts from the Independent Elections Commission; and (v) data on adherence to electoral protocols from the Free and Fair Elections Foundation of Afghanistan (FEFA). Additionally, we fielded a baseline survey of households living in the immediate vicinity of 450 of the 471 polling centers in our experimental sample a month before the election (August 2010). The 21 polling centers in the experimental sample not surveyed at baseline are in Kabul. We subsequently added these using additional funding made available after the baseline. The survey contained 2,904 respondents. To attempt to obtain a representative sample of respondents living near polling centers, enumerators employed a random walk pattern starting at the polling center, with random selection of every fourth house or structure. Respondents within households are randomly selected using Kish grid. The survey had 50 percent male and female respondents each and enumerators conducted it in either Dari or Pashto. Last, we obtain a primary measure of returns form manipulation by sending field staff to investigate whether election materials were stolen or damaged the day following the election (September 19), which we describe in section 3.

We estimate Specification 4, replacing the dependent variable with the same baseline variables

that we use to test for treatment assignment balance in Table 4. Supporting our identification strategy, we find only one case in which the coefficient on $Letter\ Delivered_c^{1km}$, conditional on the number of neighboring PCs, achieves statistical significance.[35]

A.3 Additional Figures and Tables

Table A2: Additional Summary Statistics

Variable	Mean	Std. Dev.	# Observations
Additional Fraud Measures			
Election returns form manipulation (=1)	0.133	0.34	465
Number of Electoral Complaints Commission complaints by candidate	2.617	7.865	465
Number of Electoral Complaints Commission complaints against polling official	1.935	6.697	465
Geospatial Measures			
PCs treated within 1km (=1)	0.503	0.501	465
Total PCs treated within 1km	1.084	1.352	465
Total PCs within 1km	2.204	2.505	465
PCs treated within 1-2km (=1)	0.632	0.483	465
Total PCs treated within 1-2km	2.355	2.475	465
Total PCs within 1-2km	4.712	4.693	465

Notes: Complaints data are from the Electoral Complaints Commission. Geographic coordinates for the polling substations in our sample are provided by the International Security Assistance Force (ISAF).

[35] With ten baseline variables and two comparisons per variable (20 total comparisons) one variable should achieve significance by chance.

Table A3: Impact on Votes Enforcing Constant Sample Size

Dependent Variable:	Votes			
Panel A - Impacts on Most Connected Candidates	(1)	(2)	(3)	(4)
Letter Treatment (=1)	-0.109	-0.071	0.016	0.020
	(0.264)	(0.246)	(0.055)	(0.056)
Treat x Most Connected		-5.548*	-5.528*	-5.529*
		(3.278)	(3.254)	(3.254)
Most Connected (=1)		21.612***	19.422***	19.422***
		(2.516)	(2.494)	(2.494)
Constant	1.715***	1.582***	1.550***	1.972***
	(0.195)	(0.179)	(0.040)	(0.119)
Stratum FEs	No	No	Yes	Yes
Full Covariates	No	No	No	Yes
R-Squared	0.000	0.025	0.077	0.077
# Polling Centers	436	436	436	436
# Candidate - Polling Substation Observations	309377	309377	309377	309377

Notes: *Level of significance*: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. Robust standard errors clustered at the polling center level are reported in parentheses. The full covariates are the share of respondents reporting that they are Pashtun, Tajik, who anticipate violence on election day, and whether the polling center was visited by international election monitors. The procedure for identifying the Most Connected candidate is described in Section 5.

Table A4: Impacts on Vote Share by Candidate Connection

Dependent Variable:	Vote Share x 100				
Panel A - Impacts on Most Connected Candidates	(1)	(2)	(3)	(4)	(5)
Letter Treatment (=1)	-0.022	-0.013	0.011**	0.010*	0.004
	(0.065)	(0.060)	(0.005)	(0.005)	(0.008)
Treat x Most Connected		-1.673*	-1.843**	-1.758**	-1.385**
		(0.862)	(0.899)	(0.890)	(0.674)
Most Connected (=1)		6.817***	6.267***	6.082***	5.352***
		(0.688)	(0.718)	(0.711)	(0.524)
Constant	0.522***	0.486***	0.561***	0.558***	0.514***
	(0.047)	(0.043)	(0.004)	(0.005)	(0.013)
Stratum FEs	No	No	Yes	Yes	Yes
Full Covariates	No	No	No	Yes	Yes
Trimming top 1% of votes for interacted candidate type	No	No	No	No	Yes
R-Squared	0.000	0.026	0.086	0.085	0.094
# Polling Centers	461	461	440	436	436
# Candidate - Polling Substation Observations	379462	379462	304543	303973	303816

Notes: *Level of significance*: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. Robust standard errors clustered at the polling center level are reported in parentheses. The full covariates are the share of respondents reporting that they are Pashtun, Tajik, who anticipate violence on election day, and whether the polling center was visited by international election monitors. The procedure for identifying the Most Connected candidate is described in Section 5.

Table A5: Validation Tests the Randomization to Test for Spatial Externalities

	Transport Problems	Expects Violence	Vote is Secret	Can Identify MP	Traditional Authority
Panel A	(1)	(2)	(3)	(4)	(5)
Received Letter (=1)	0.008	-0.001	-0.020	0.015	0.008
	(0.026)	(0.026)	(0.022)	(0.020)	(0.021)
PCs treated within 1km (=1)	0.023	0.101**	-0.036	0.018	0.018
	(0.048)	(0.042)	(0.035)	(0.034)	(0.036)
Total PCs within 1km (0-5)	-0.011	-0.007	0.014	0.000	0.009
	(0.010)	(0.009)	(0.009)	(0.007)	(0.008)
PCs treated within 1-2km (=1)	0.064	0.012	0.040	0.011	0.054
	(0.047)	(0.048)	(0.038)	(0.042)	(0.042)
Total PCs within 1-2km (0-24)	0.004	-0.002	0.001	-0.008**	-0.010**
	(0.006)	(0.006)	(0.005)	(0.004)	(0.004)
Constant	0.487***	0.460***	0.626***	0.394***	0.270***
	(0.034)	(0.034)	(0.030)	(0.037)	(0.031)
# Observations	440	441	444	444	444
R-Squared	0.326	0.442	0.338	0.645	0.359
	Pashtun	Income	Electrified	District Gov. Keeps Fair	Visited by Int'l Monitors
Panel B	(1)	(2)	(3)	(4)	(5)
Received Letter (=1)	-0.011	-149.753	-0.011	0.002	0.036
	(0.018)	(481.044)	(0.015)	(0.012)	(0.034)
PCs treated within 1km (=1)	-0.009	399.626	0.023	0.019	0.071
	(0.027)	(712.704)	(0.026)	(0.021)	(0.053)
Total PCs within 1km (0-5)	0.005	-133.289	0.002	-0.006	0.022*
	(0.007)	(217.359)	(0.005)	(0.005)	(0.012)
PCs treated within 1-2km (=1)	0.019	-261.177	0.029	-0.022	0.005
	(0.029)	(713.956)	(0.030)	(0.024)	(0.058)
Total PCs within 1-2km (0-24)	-0.007*	133.008	0.002	-0.003	0.015*
	(0.004)	(129.985)	(0.003)	(0.003)	(0.008)
Constant	0.340***	10292.155***	0.678***	0.140***	-0.008
	(0.023)	(567.930)	(0.023)	(0.018)	(0.050)
# Observations	444	439	444	442	444
R-Squared	0.817	0.310	0.780	0.506	0.225

Notes: *Level of significance*: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. Robust standard errors are reported in parentheses. Dependent variables are drawn from the baseline survey of 2,904 respondents, performed in the immediate vicinity of polling centers in one month before the election in August 2010. All regressions include stratum and province fixed effects.

Polling Center Name: ……..

Polling Center Code:…….

Date: ……

Dear Sir or Madam-

Greetings! I am an official election observer with the Opinion Research Center of Afghanistan (ORCA). My organization is providing this letter to collect some important information about your polling center and share it with our main office. Your polling center has been randomly selected from among polling centers in this province.

In our attempts to help Afghanistan have free and fair elections, I will return to this polling center tomorrow morning in order to take pictures of the results for every candidate in every station on the tally sheets after they have been posted.

The information will be posted on a website that belongs to local and international election observers so that it will be used by the people of Afghanistan, the international community, and local and international media. We will also compare the photos taken with the tally certified by the IEC in Kabul.

As recognition that you have read and understood this letter, please sign here: _____

Thank you kindly for your help and cooperation.

Sincerely,

Haj Abdul Nabi Barakzai

Deputy Head of ORCA

Name and Signature of manager of polling station:……

Figure A1: Letter Delivered to Polling Center Managers

نام مرکز رائ ده‌ی: _____ تاریخ: _____

____ مرکز رائ ده‌ی: _____کود

به حضور محترم آقای / خانم

مسئولیت نظارت 472 مراکز رائ برحسب توافق‌نامه کمیسیون مستقل انتخابات دفتر اورکا ده‌ی را بر عهده دارد.

می‌باشد و برای او (ORCA) دفتربه مربوطیک تن از نظارت کننده گان رسمی‌دارنده مکتوب معلومات تا بتواند مرکز رای ده‌ی تسلیم نموده‌ای‌ن تا این مکتوب را وظیفه سپرده شده است . این مرکز دفتر مرکزی شریک بس‌ازدجمع آوری نموده و با مرکز رای ده‌ی این و دقیق را ازموثق این ولایت تمام مراکز رای ده‌ی می‌انبه صورت تصادفی از گر به شمول چندین مراکز دیرای ده‌ی انتخاب شده است.

فردا صبح . ناظر ما یک انتخابات آزاد و مشروع در افغانستان کمک خواهیم کرد تقویتبرایما . نصب می‌گردد اخذ نمایدمرکز رای ده‌ای‌ن که در را نتایج کاندیدان لست آمد تا تصاویر از دخواه

گذاشته مربوط به ناظرین انتخاباتی داخلی و خارجی این نتایج در سایت انترنتی تصاویر از این نتایج ، موسسات خارجی، و مطبوعات داخلی و خارجیخواهد شد تا تمام مردم افغانستان نتایج را با نتایج که از طرف این‌تصاویر حاصله از ناظرحیث مناستفاده کنند. و همچنان ما انتخابات در کابل نشر می‌شود مقایسه خواهیم کرد. مستقلکمیسیون

در پائین ایدبرای تائید این‌که این مکتوب بدسترس شما قرار گرفته و شما انرا مطالعه نموده مضا نمائید. لطف نموده ا

از همکاری شما قبلاً اظهار سپاس.

بااحترام

حاجی عبدالنبی بارکزی

معاون دفتر اورکا

آمر محترم مرکزرائ ده‌ی: _____ یامضااسم و

Figure A2: Dari Translation of Letter Delivered to Polling Center Managers