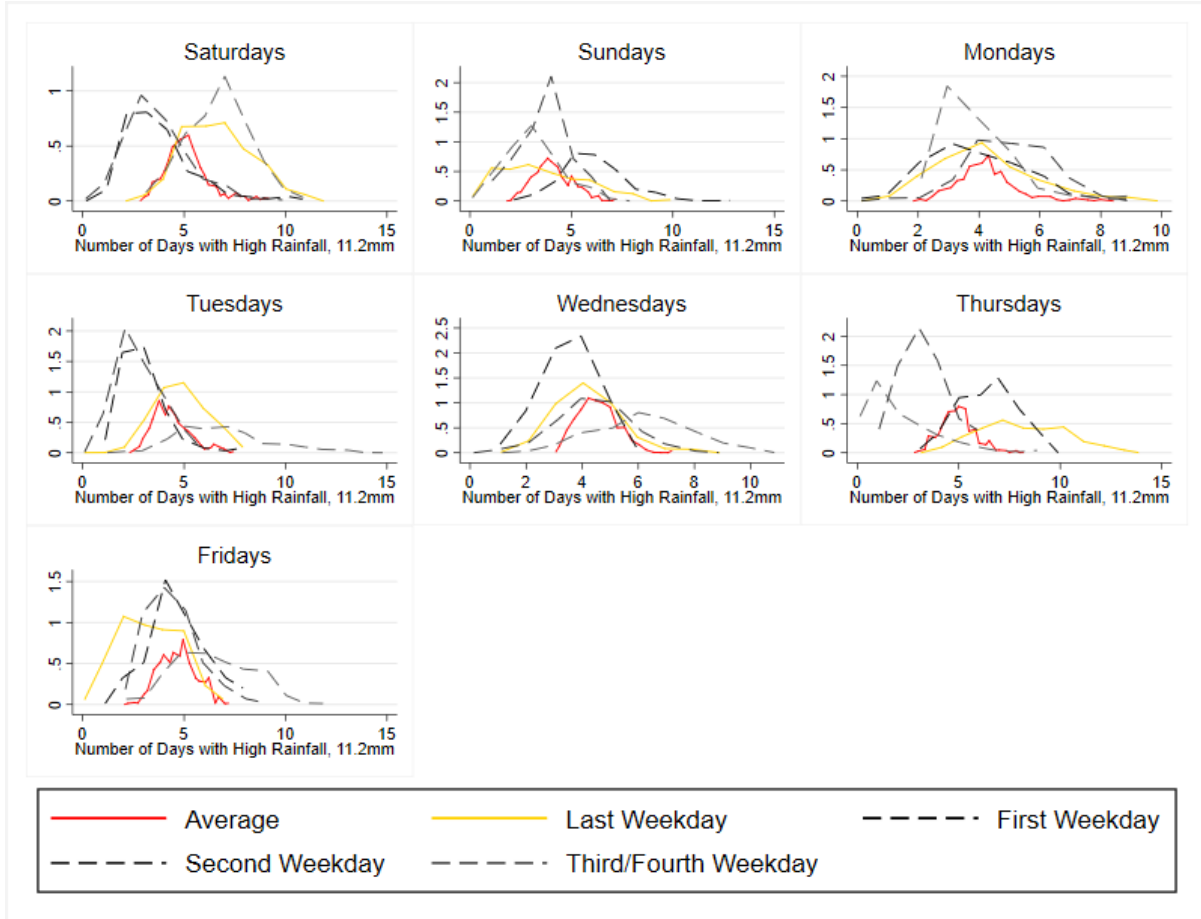


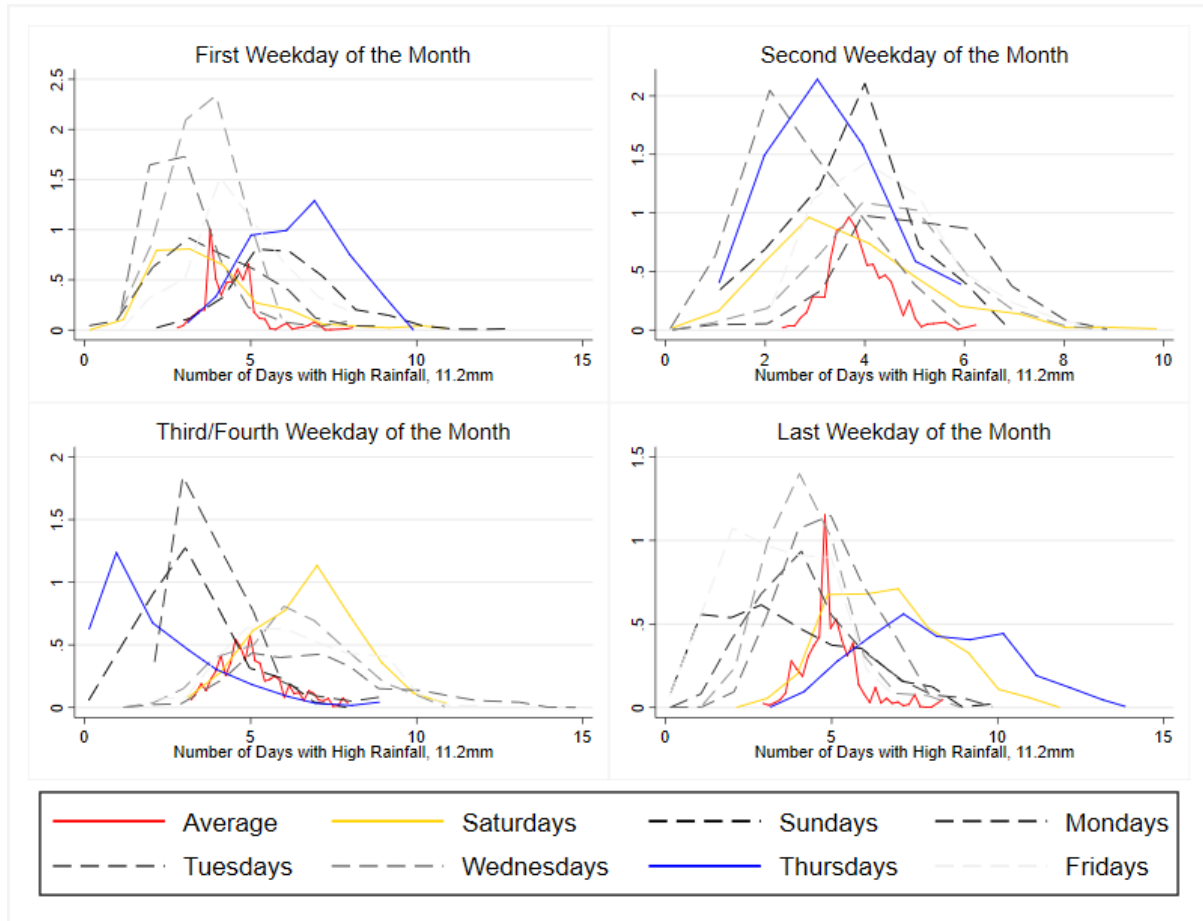
# Online Appendix for *Wolves in Sheep's Clothing: Community Meetings and Voter Control in Non-Democracies*

**Figure A.1:** Weekday High Rainfall (11.2 mm) Distributions by First/Second/Middle/Last Weekday of the Month



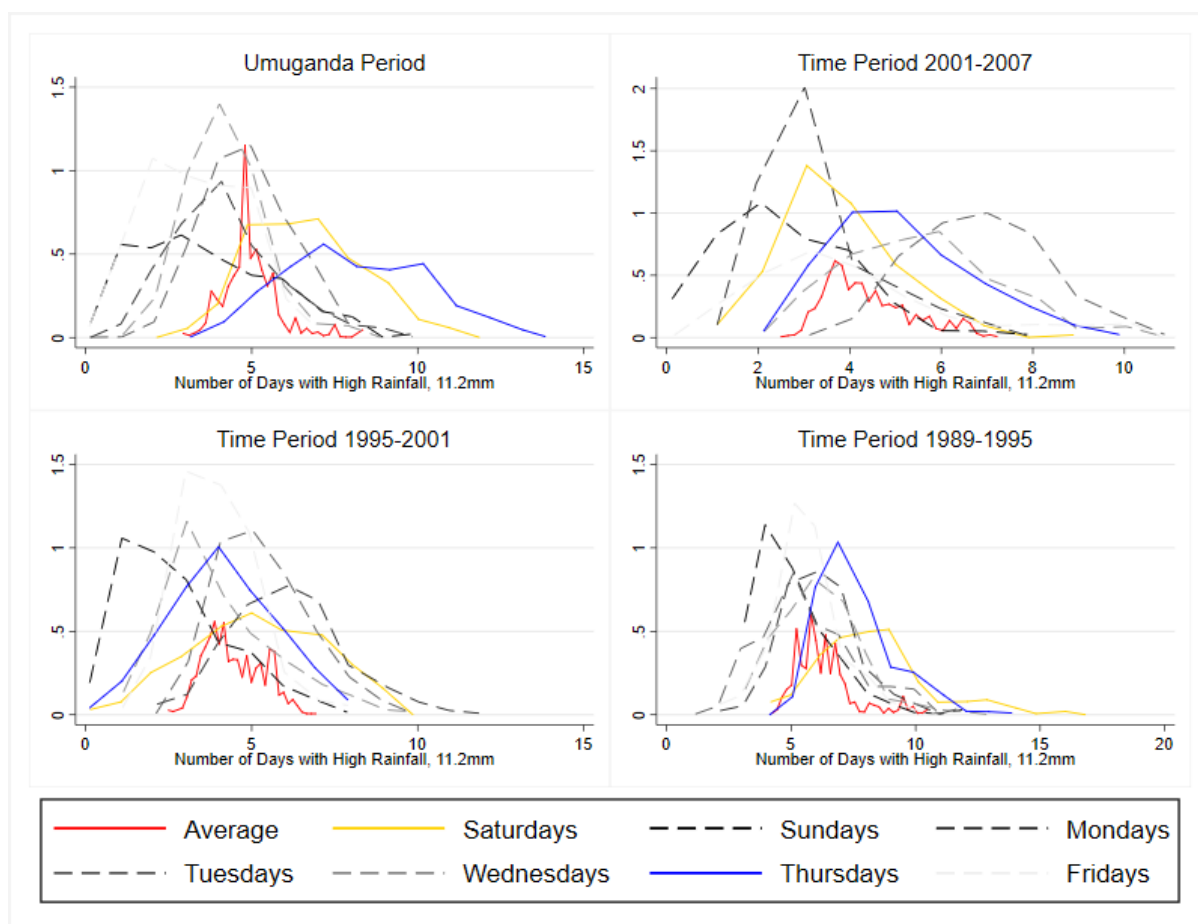
Notes: The figures plot the histograms (no kernel estimation) of various rainfall measures. For example, the subfigure labeled “Saturdays” plots the number of days with high rainfall (11.2 mm threshold) for the first, second, third/fourth and last Saturday of each month and high rainfall on any Saturday of the month (i.e., the average, red line).

**Figure A.2:** First/Second/Middle/Last-Day-of-the-Month High Rainfall (11.2 mm) Distributions by Weekday



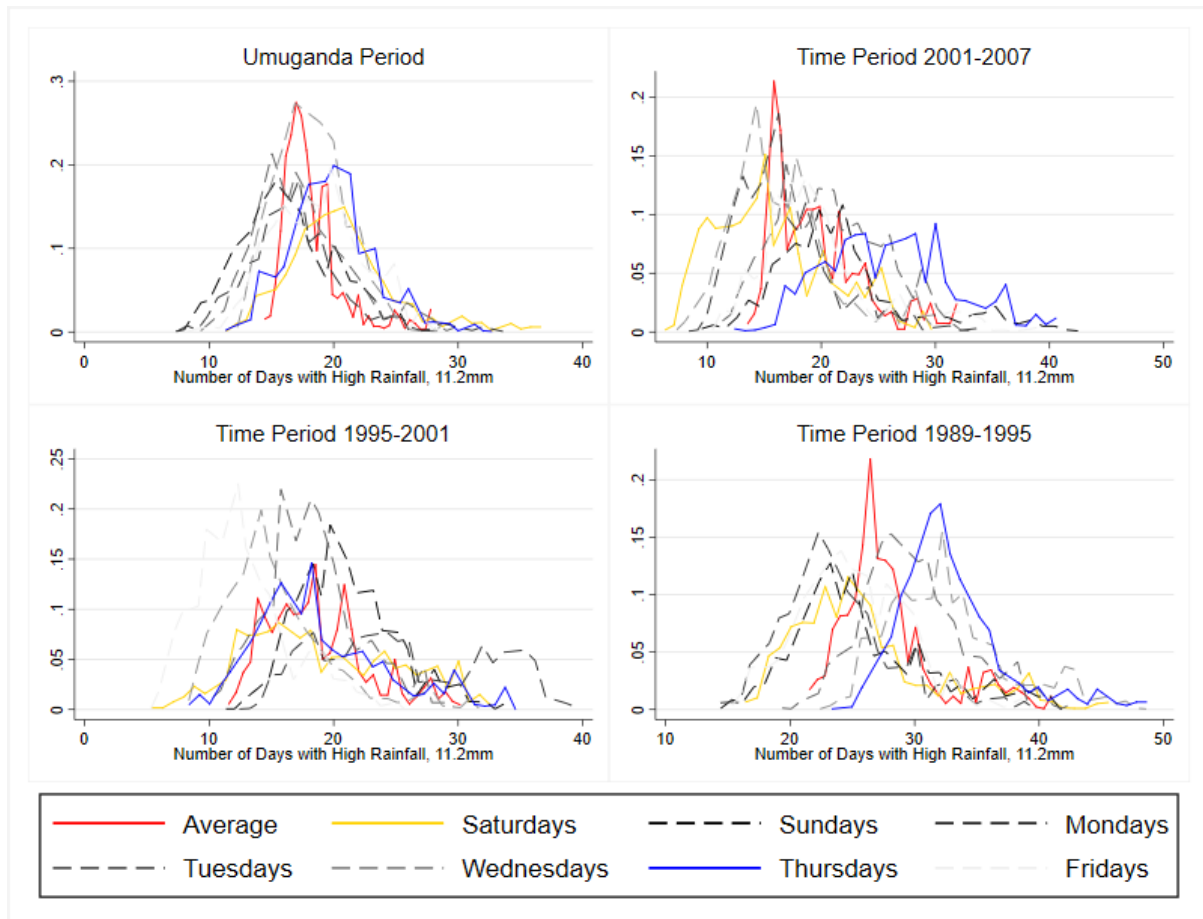
Notes: The figures plot the histograms (no kernel estimation) of various rainfall measures. For example, the subfigure labeled “Last Weekday of the Month” plots the number of last days of the month with high rainfall (11.2 mm threshold) for each weekday (Sat-Fri) and high rainfall on any last day of the month (i.e., the average, red line).

**Figure A.3:** Last-Day-of-the-Month High Rainfall (11.2 mm) Distributions by Weekday (*Umuganda* Period and Placebos)



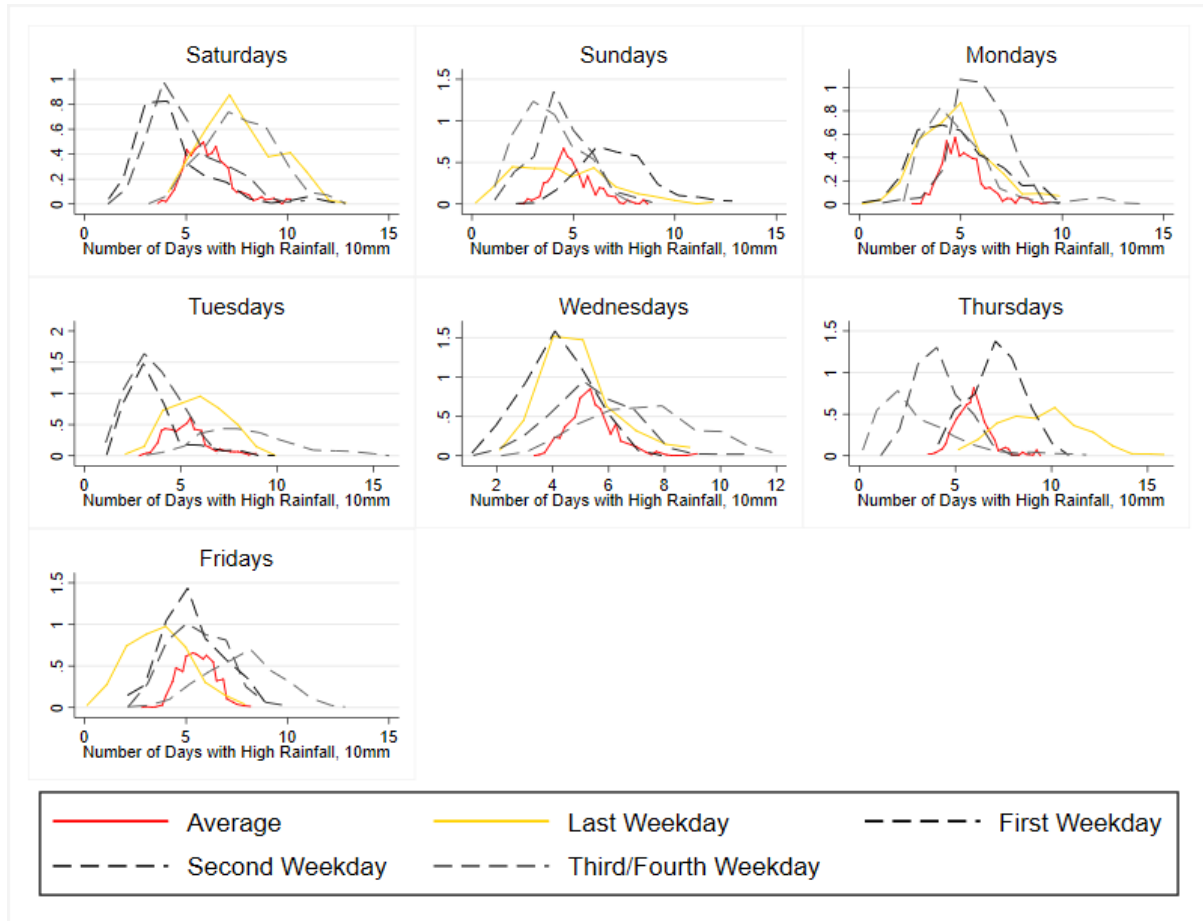
Notes: The figures plot the histograms (no kernel estimation) of last day of the month rainfall for various time periods. To start, the subfigure labeled “*Umuganda* Period” plots the number of last days of the month with high rainfall (11.2 mm threshold) for each weekday (Sat-Fri) and high rainfall on any last day of the month (i.e., the average, red line). All other subfigures plot the same rainfall measure but for different time periods.

**Figure A.4:** High Rainfall (11.2 mm) Distributions by Weekday (*Umuganda* Period and Placebos)



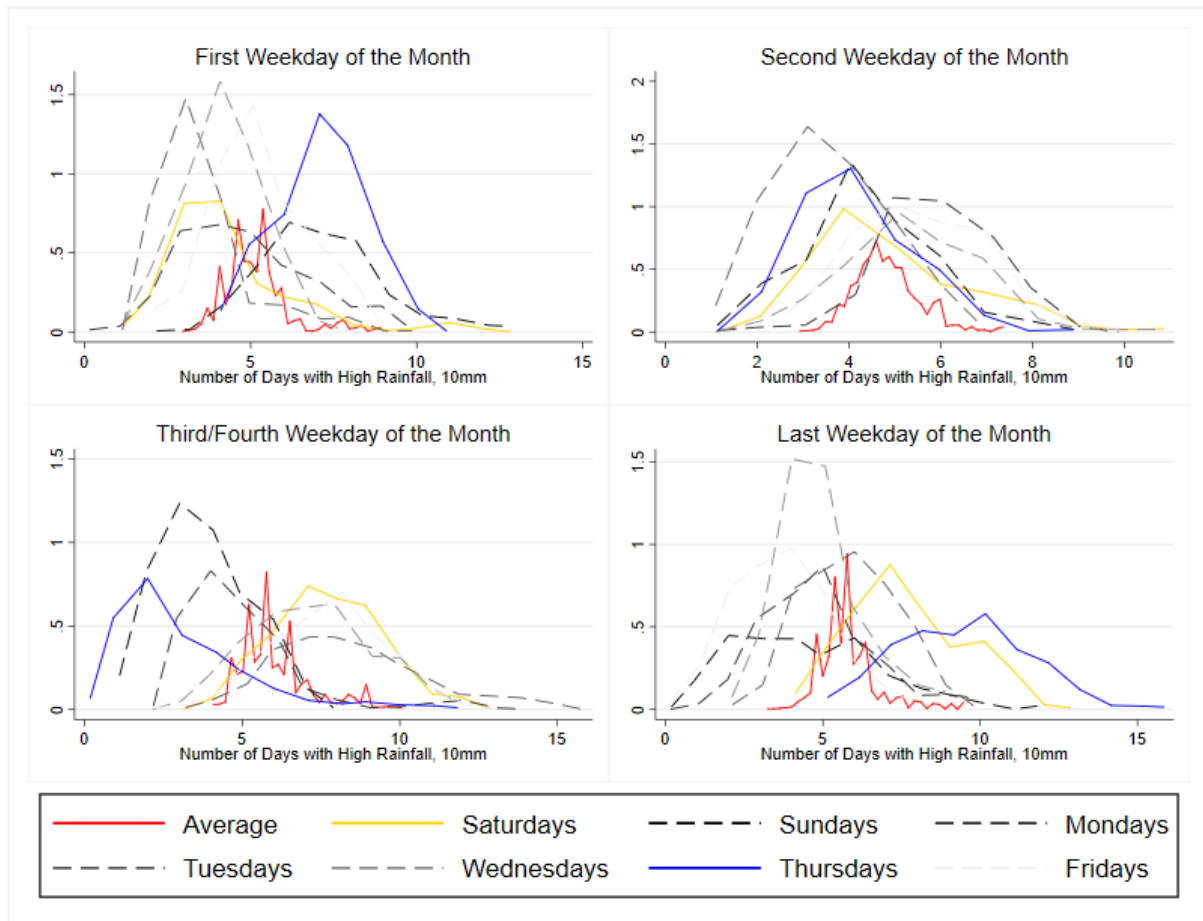
Notes: The figures plot the histograms (no kernel estimation) of average weekday rainfall for various time periods. To start, the subfigure labeled “*Umuganda* Period” plots the number days with high rainfall (11.2 mm threshold) for each weekday (Sat-Fri) and high rainfall on any day of the month (i.e., the average, red line). All other subfigures plot the same rainfall measure but for different time periods.

**Figure A.5:** Weekday High Rainfall (10 mm) Distributions by First/Second/Middle/Last Weekday of the Month



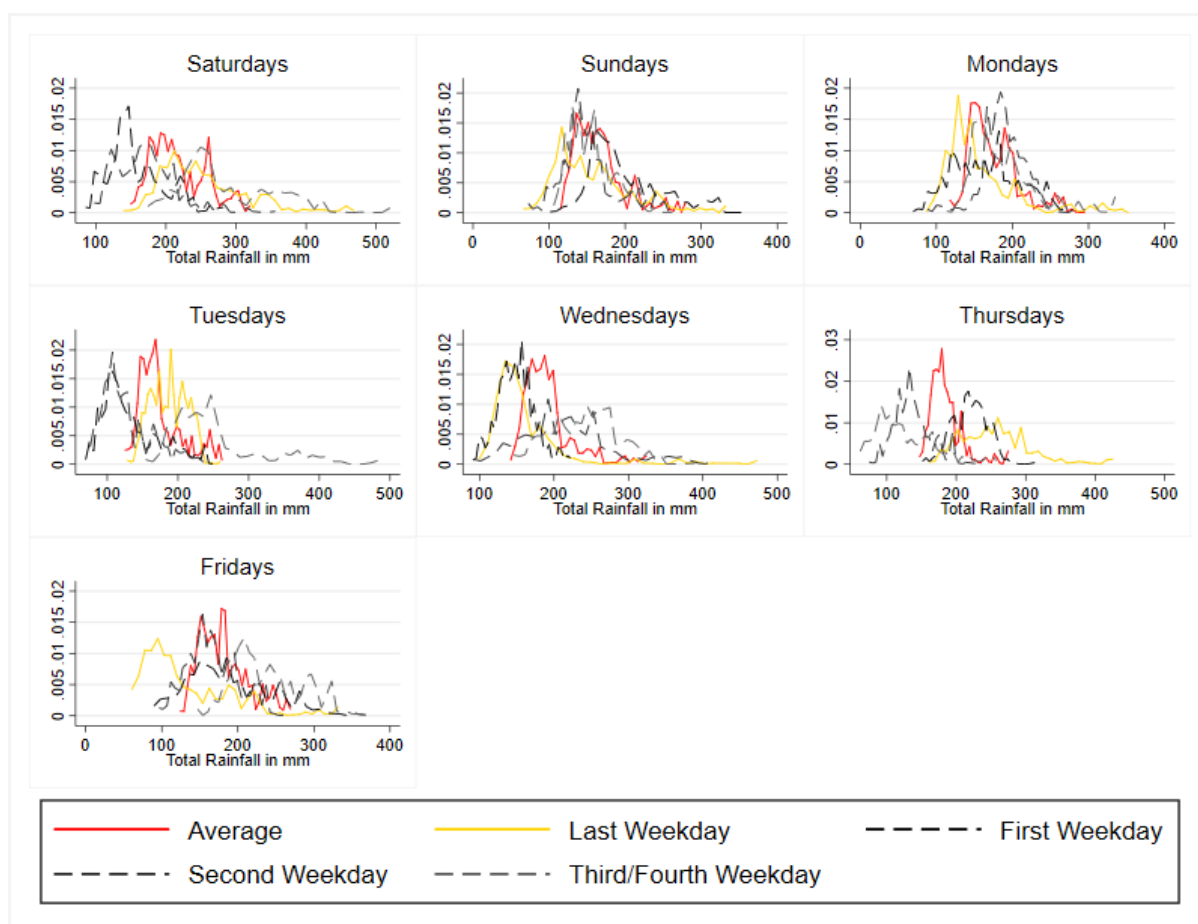
Notes: The figures plot the histograms (no kernel estimation) of various rainfall measures. For example, the subfigure labeled “Saturdays” plots the number of days with high rainfall (10 mm threshold) for the first, second, third/fourth and last Saturday of each month and high rainfall on any Saturday of the month (i.e., the average, red line).

**Figure A.6:** First/Second/Middle/Last-Day-of-the-Month High Rainfall (10 mm) Distributions by Weekday



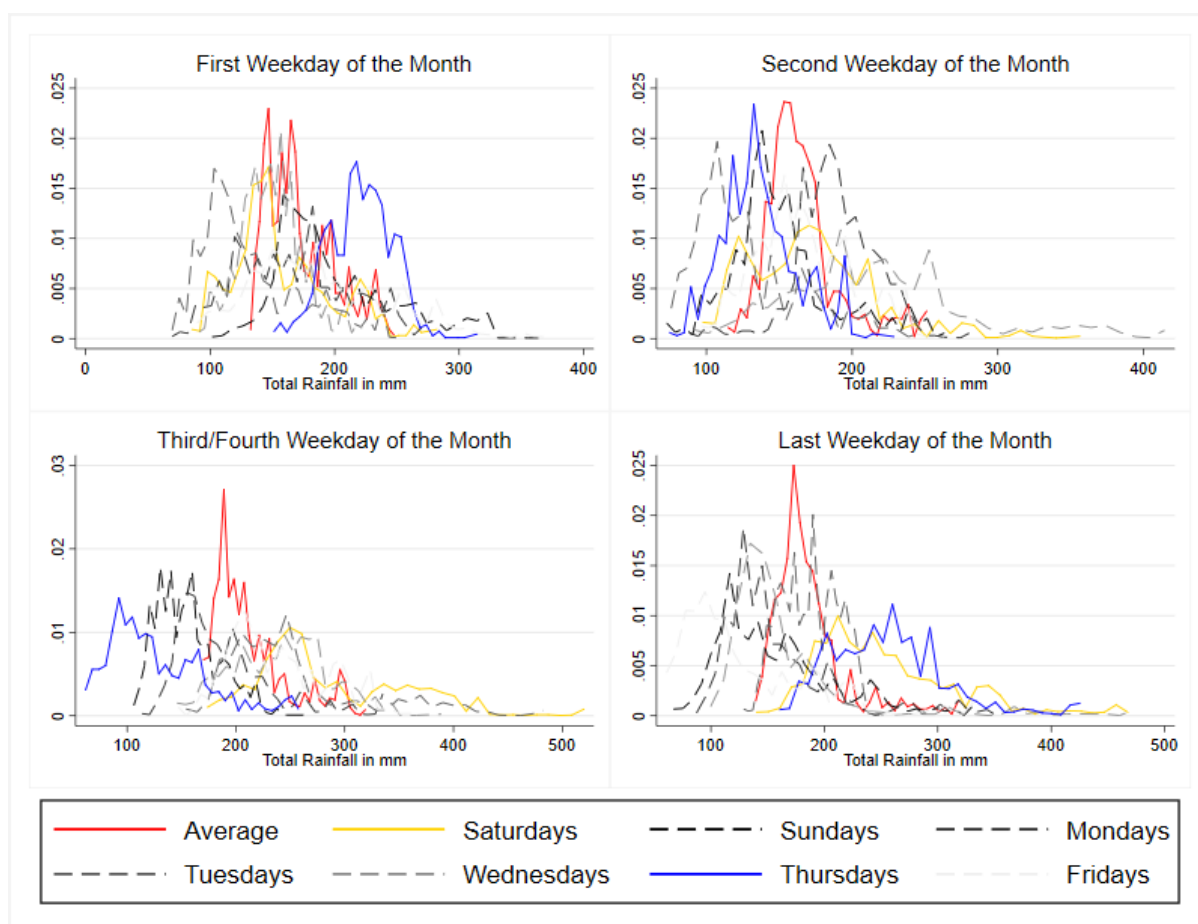
Notes: The figures plot the histograms (no kernel estimation) of various rainfall measures. For example, the subfigure labeled “Last Weekday of the Month” plots the number of last days of the month with high rainfall (10 mm threshold) for each weekday (Sat-Fri) and high rainfall on any last day of the month (i.e., the average, red line).

**Figure A.7:** Weekday Rainfall Distributions by First/Second/Middle/Last Weekday of the Month



Notes: The figures plot the histograms (no kernel estimation) of various rainfall measures. For example, the subfigure labeled “Saturdays” plots total rainfall for the first, second, third/fourth and last Saturday of each month and total rainfall on any Saturday of the month (i.e., the average, red line).

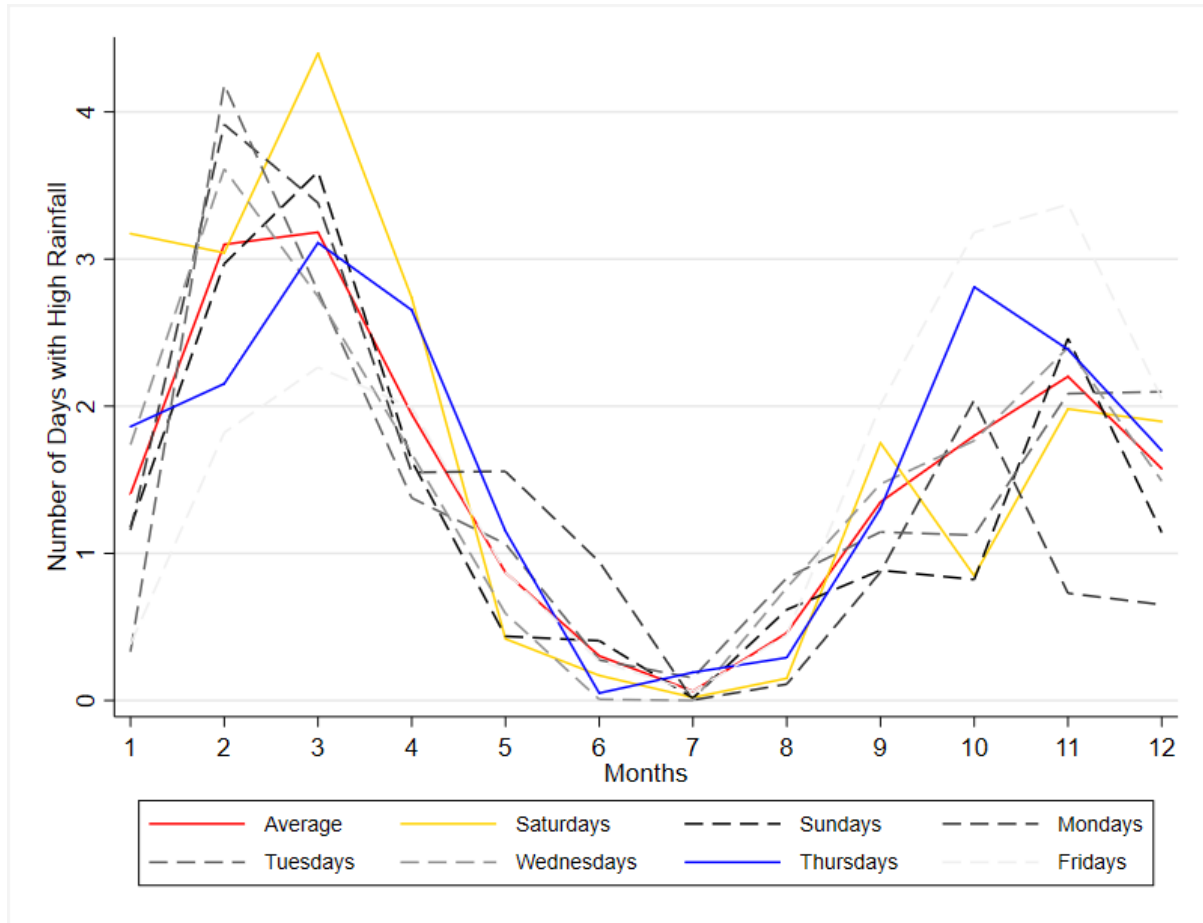
**Figure A.8:** First/Second/Middle/Last-Day-of-the-Month Rainfall Distributions by Weekday



Notes: The figures plot the histograms (no kernel estimation) of various rainfall measures. For example, the subfigure labeled “Last Weekday of the Month” plots total rainfall on the last days of the month for each weekday (Sat-Fri) and total rainfall on any last day of the month (i.e., the average, red line).

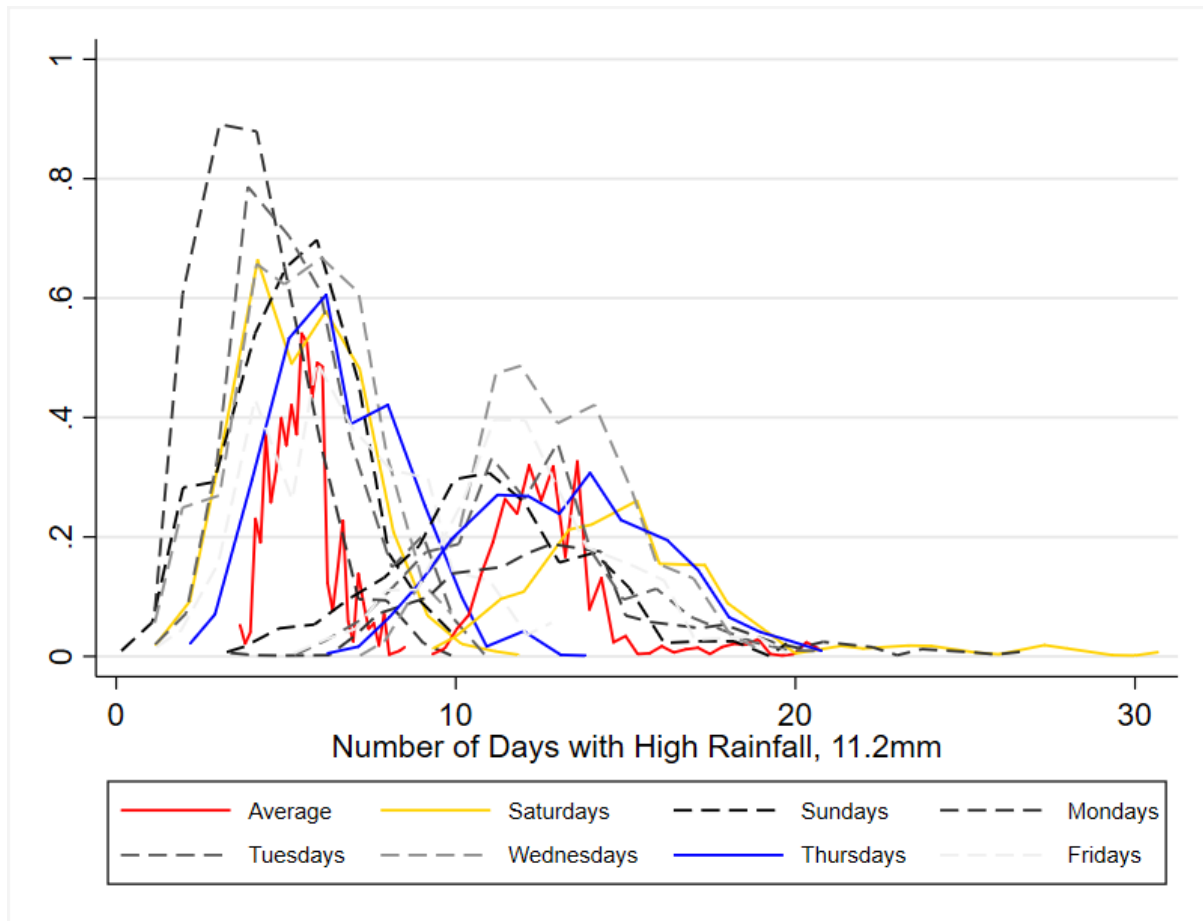


**Figure A.9: High Rainfall (11.2 mm) by Month**



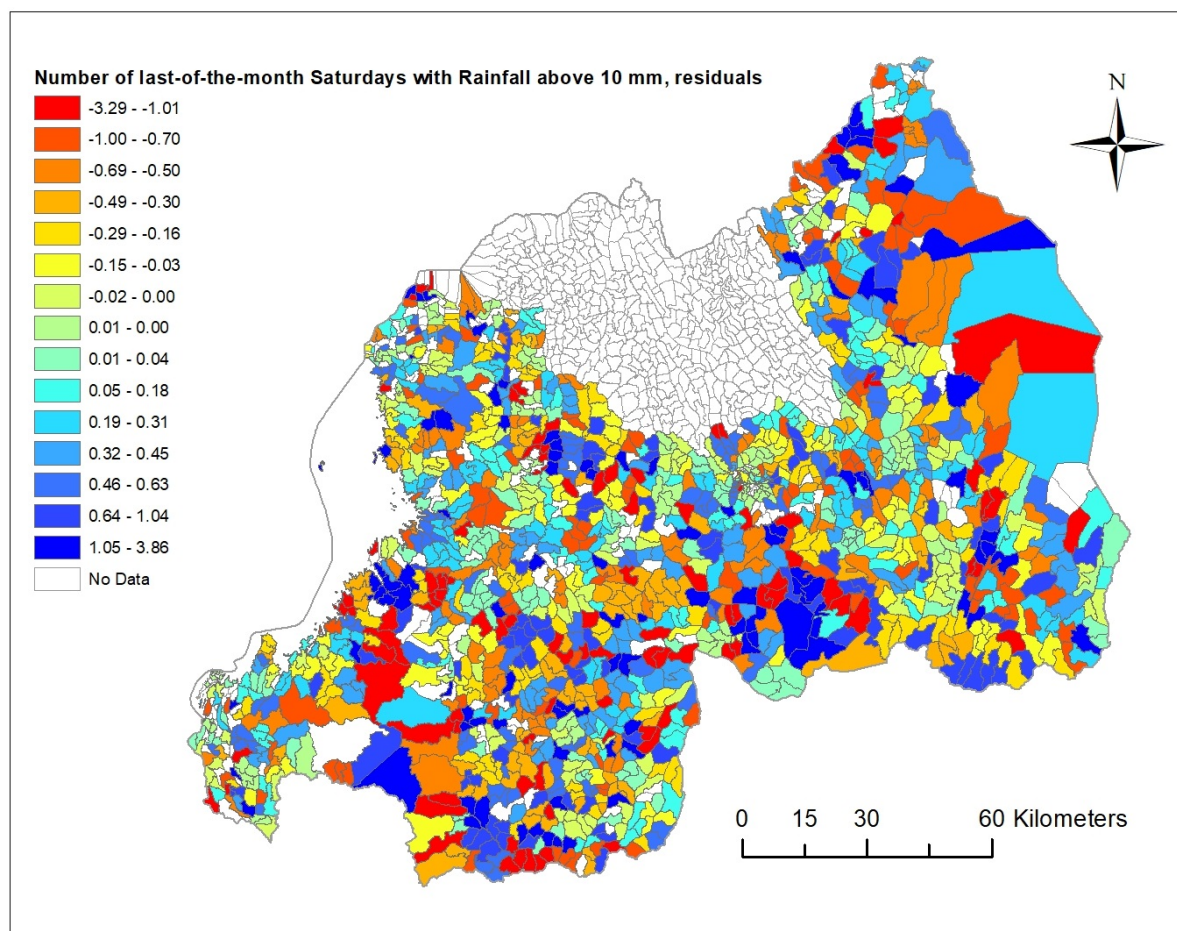
Notes: The figure plots the number of days with high rainfall (11.2 mm threshold) for each weekday by calendar month as well as high rainfall on any day (i.e., the average, red line).

**Figure A.10:** High Rainfall (11.2 mm) Distributions by Work/Lean Season



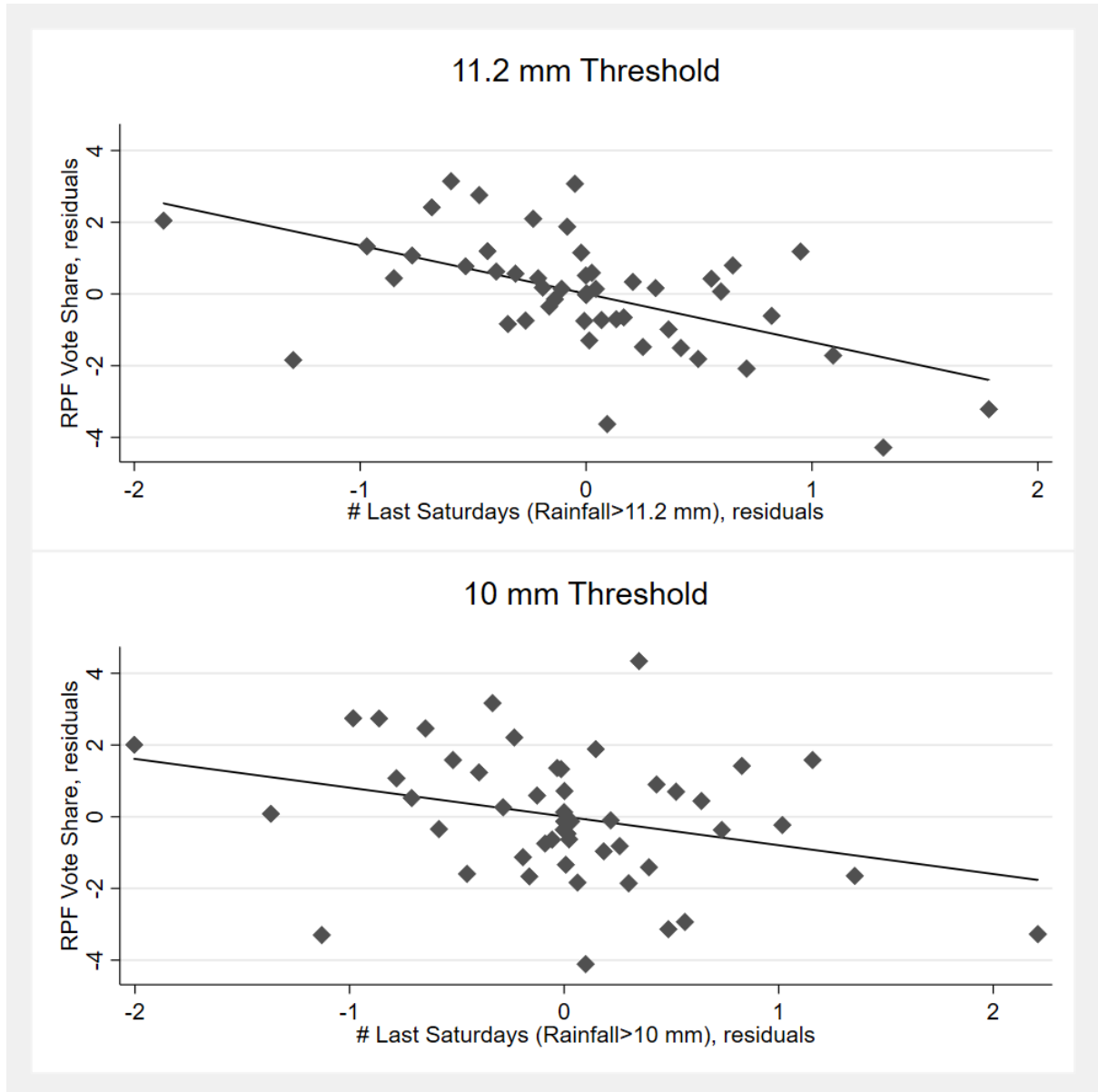
Notes: The figure plots the histograms (no kernel estimation) of the number days with high rainfall (11.2 mm threshold) for each weekday (Sat-Fri) and high rainfall on any day of the month (i.e., the average, red line) for the work and lean season (work season overall shifted to the right).

**Figure A.11: Local Variation in Saturday Rainfall – Residuals**



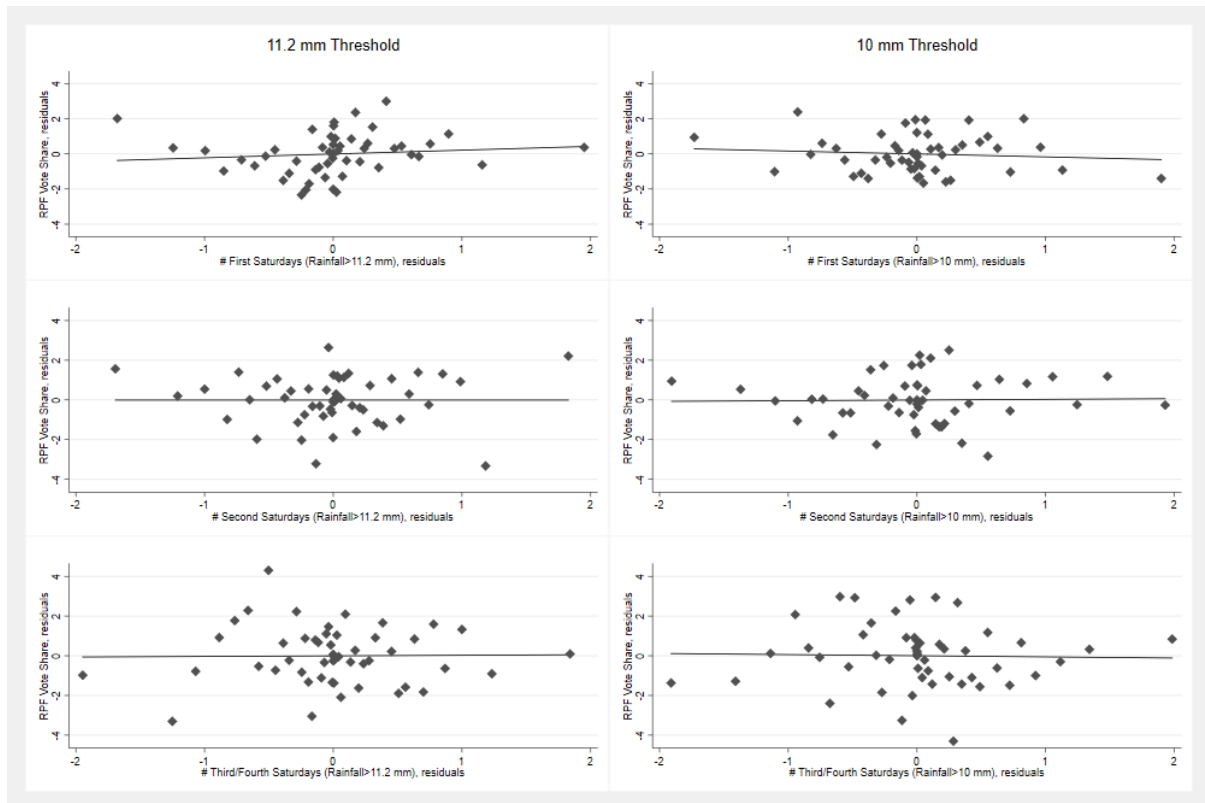
Notes: The map plots the residuals of the number of last-of-the-month Saturdays with rainfall above 10 mm after netting out sector fixed effects and other average rainfall controls.

**Figure A.12:** *Umuganda* Rainfall & Voting Relationship



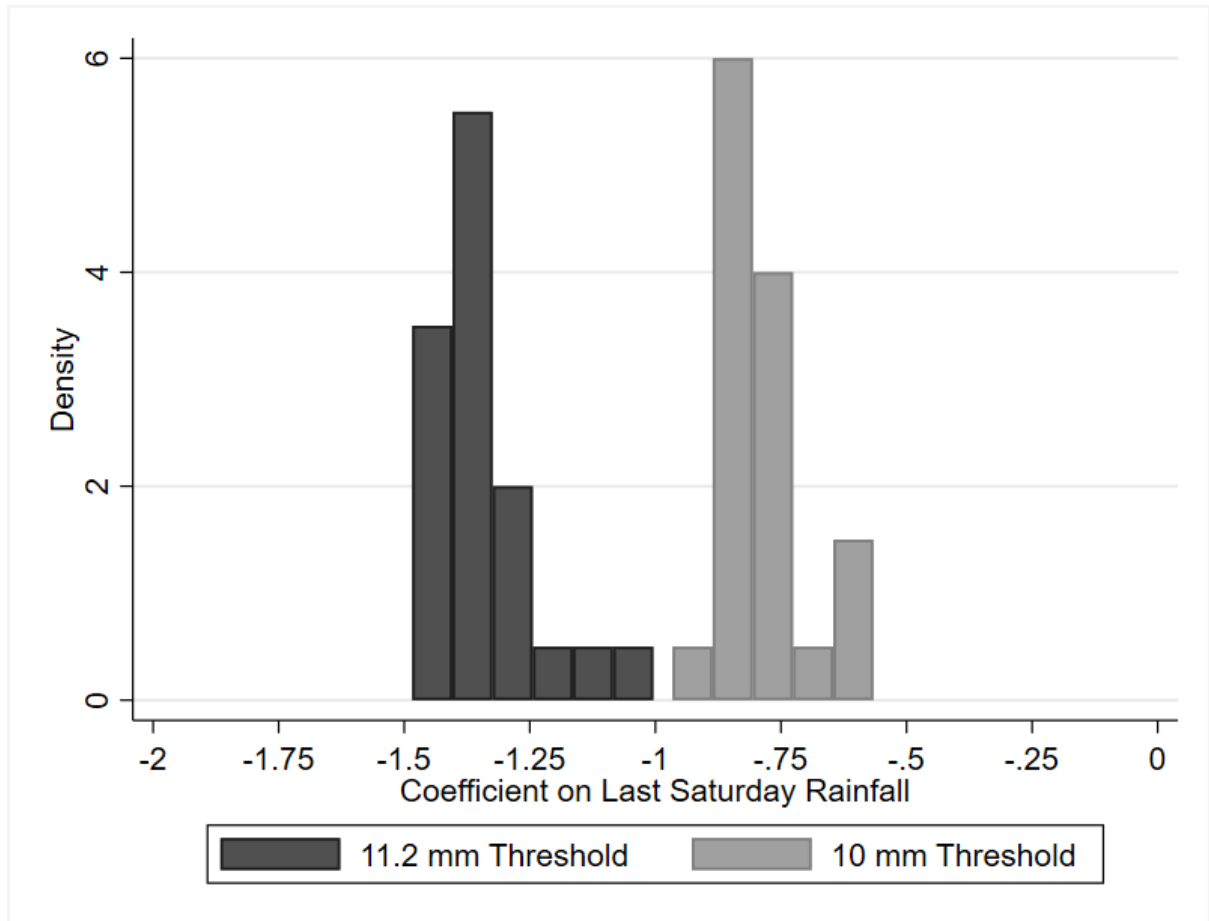
Notes: Observations are grouped into 50 equal-sized bins. All controls from my preferred specifications (regressions 2 and 4 in Table 2) are used to construct residuals.

**Figure A.13:** Relationship between RPF Voting and Rainfall for other Saturdays



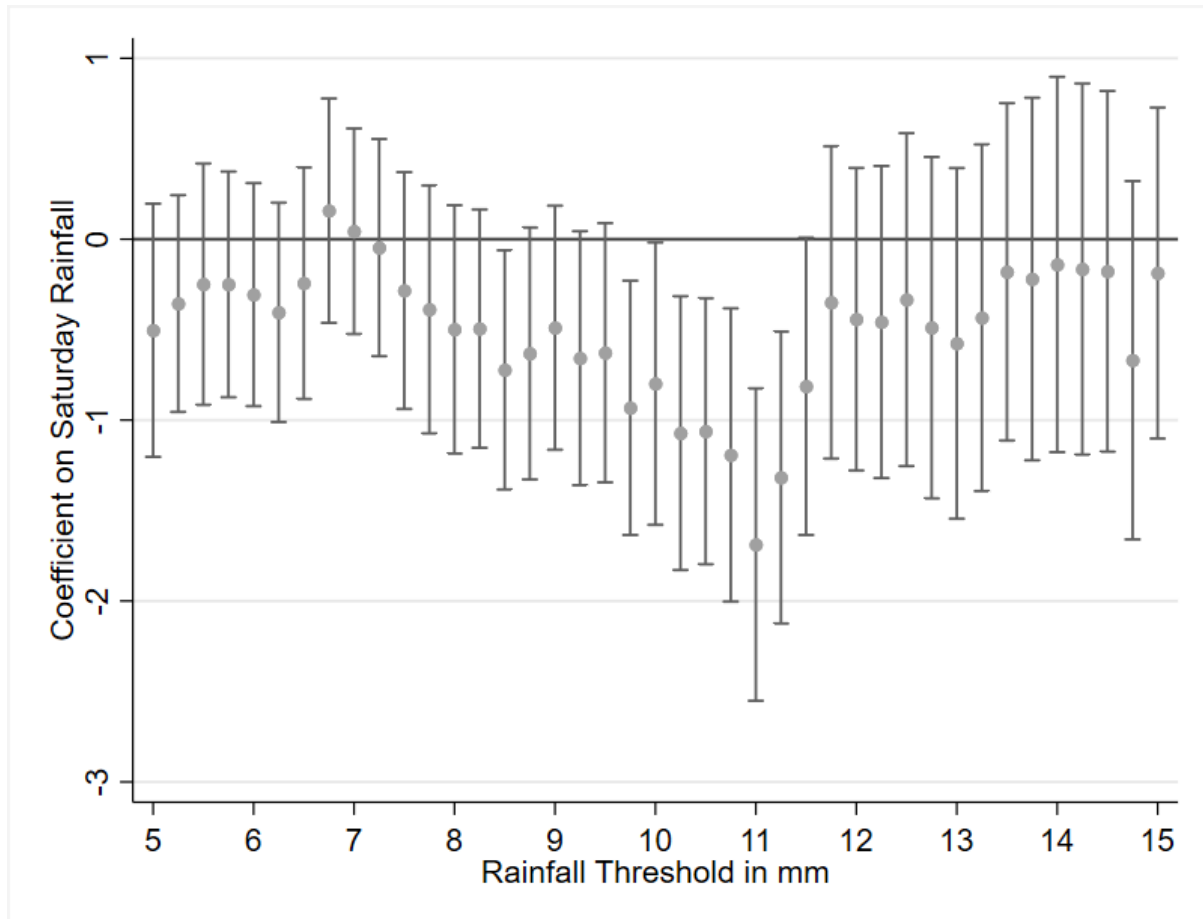
Notes: Observations are grouped into 50 equal-sized bins. All controls from my preferred specification (regressions 2 and 4 in Table 2) are used to construct residuals.

**Figure A.14:** Outliers



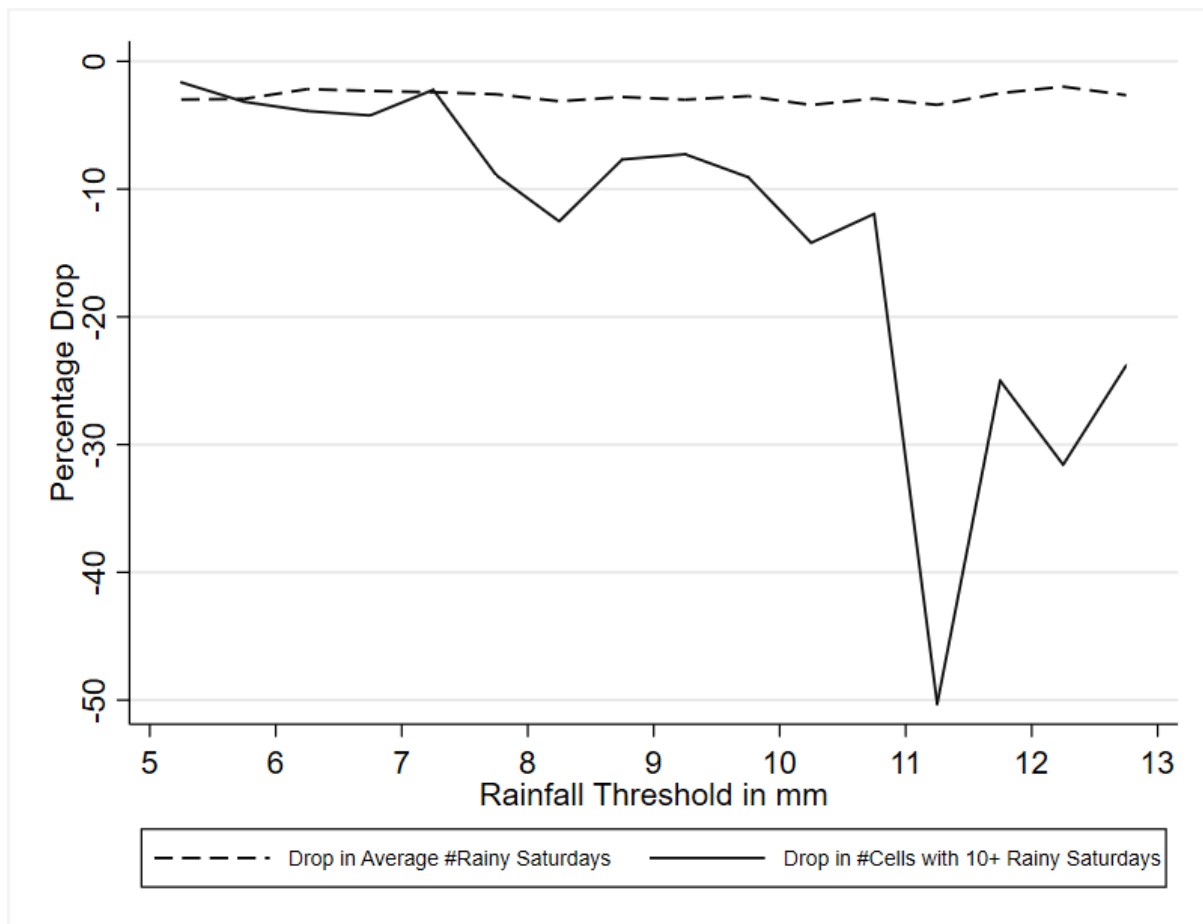
Notes: This figure shows the distribution of point estimates on the number of rainy last-of-the-month Saturdays (for thresholds 11.2 and 10 mm) when dropping one district at a time in the baseline specification (regressions 2 and 4 in Table 2 in the paper).

**Figure A.15:** Different Thresholds



Notes: The figure shows the coefficients on the number of rainy Last Saturdays (together with 95 percent confidence bounds) when varying the rainfall threshold in my main specifications (regressions 2 and 4 in Table 2). Each point represents a separate regression.

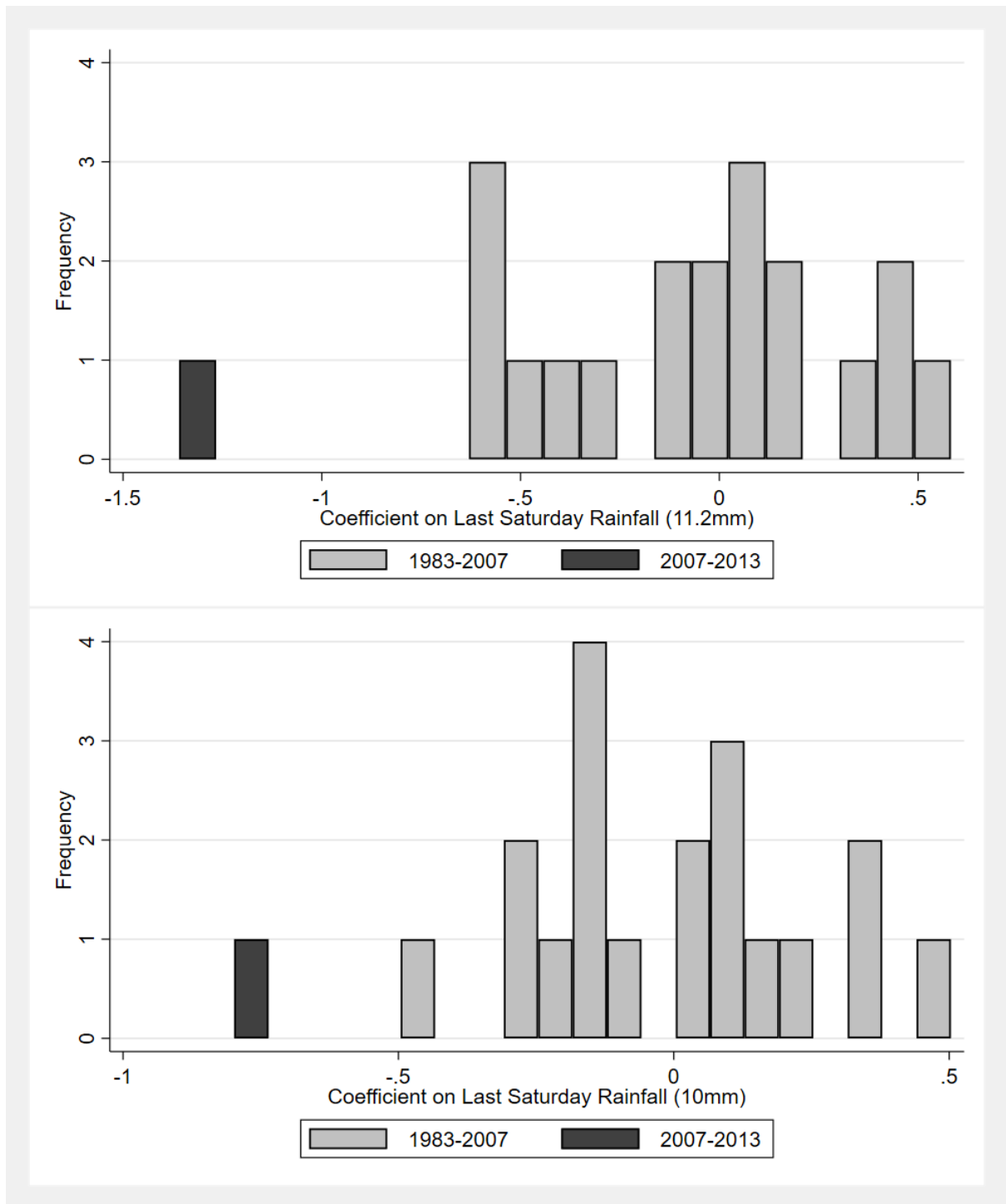
**Figure A.16:** Understanding the Threshold Effect



Notes: The figure plots for each threshold the relative drop in the average number of days with high rainfall per cell and the drop in the number of cells with more than 10 high rainfall Saturdays (right tail of the distribution) with respect to the preceding threshold. To get an idea, the average decreases steadily by around 3-4 percent with every 0.25 mm threshold increase. On the other hand, after 11 mm, the number of cells with more than 10 rainy Saturdays drops by around 50 percent. After 13 mm, that number drops to zero.



**Figure A.17: Placebo Check**



Notes: The figure shows the distribution of coefficients on the number of rainy Last Saturdays (for thresholds 11.2 and 10 mm) when using Last Saturday rainfall during the 6 years of the post-genocide *Umuganda* calendar period (November 18, YEAR to September 16, YEAR+6) from the years 1983 to 2007 to construct the variable of interest in regressions 2 and 4 in Table 2. Note that I exclude any periods that overlap with my period of interest. Thus, in total I obtain 19 placebo periods, namely all the 6-year periods with starting years from 1983 to 2001.

**Table A.1:** Additional Summary Statistics (10 mm Rainfall Variables)

	Mean	Min	Max	Std.Dev.	Obs.
<u>A. Additional Rainfall Variables</u>					
# Last Sun(Rainfall > 10 mm)	4.28	0.00	12.00	2.32	1560
# Last Mon(Rainfall > 10 mm)	5.02	0.00	10.00	1.79	1560
# Last Tue(Rainfall > 10 mm)	5.53	2.00	10.00	1.44	1560
# Last Wed(Rainfall > 10 mm)	4.98	2.00	9.00	1.47	1560
# Last Thu(Rainfall > 10 mm)	9.58	5.00	16.00	2.15	1560
# Last Fri(Rainfall > 10 mm)	3.76	0.00	8.00	1.60	1560
# Last Sat(Rainfall > 10 mm)	7.88	4.00	13.00	1.83	1560
# Last Sun-Fri(Rainfall > 10 mm)	33.15	18.00	57.00	6.00	1560
# First Sat(Rainfall > 10 mm)	4.46	1.00	13.00	1.98	1560
# Second Sat(Rainfall > 10 mm)	5.08	1.00	11.00	1.83	1560
# Third/Fourth Sat(Rainfall > 10 mm)	7.63	3.00	13.00	1.84	1560
# Thursdays(Rainfall > 10 mm)	23.88	14.00	38.00	3.77	1560
# Three canceled meetings in a row (10 mm)	0.46	0.00	3.00	0.61	1560
# Four canceled meetings in a row (10 mm)	0.08	0.00	1.00	0.28	1560
# Saturdays(Rainfall > 10 mm), 1990-1994	12.11	5.00	26.00	4.24	1560
# Saturdays(Rainfall > 10 mm), 1986-1990	15.81	7.00	36.00	4.66	1560
# Saturdays(Rainfall > 10 mm), 1994-1998	18.72	5.00	35.00	5.94	1560

Notes: The unit of observation is the administrative cell. All variables labeled “# **Last XXX(Rainfall>10 mm)**” record the number of days of the month indicated in the variable name with rainfall above 10 mm, during the period November 2007 to September 2013. # **Last Sun-Fri(Rainfall>10 mm)** is the number of last-of-the-month Sun/Mon/Tue/Wed/Thu/Fri with rainfall above 10 mm during the period November 2007 to September 2013.

**Table A.2: Friday Before Last Saturday Effects**

Dependent variable:	RPF Vote Share					
Threshold:	$t = 11.2$ mm			$t = 10$ mm		
	(1)	(2)	(3)	(4)	(5)	(6)
Friday before Last Sat(Rainfall > $t$ mm)	0.542 (0.621)	0.336 (0.628)		0.249 (0.455)	0.171 (0.453)	
Last Sat(Rainfall > $t$ mm)	-1.418 (0.414)			-0.830 (0.404)		
Fri/Last Sat(Rainfall > $t$ mm)			-1.194 (0.717)			-0.749 (0.569)
Standard Controls	yes	yes	yes	yes	yes	yes
Other Rainfall Controls	yes	yes	yes	yes	yes	yes
Sector Effects	yes	yes	yes	yes	yes	yes
R <sup>2</sup>	0.48	0.48	0.48	0.48	0.48	0.48
N	1560	1560	1560	1560	1560	1560

Notes: **# Friday before Last Sat(Rainfall >  $t$  mm)** is the number of Fridays before last-of-the-month Saturdays with rainfall above  $t$  mm ( $t$  given in the column header) during the period November 2007 to September 2013. **# Last Sat(Rainfall >  $t$  mm)** is the number of last-of-the-month Saturdays with rainfall above  $t$  mm during the period November 2007 to September 2013. **Standard Controls** include average daily rainfall for November 1997 to November 2007 and average daily rainfall for November 2007 to September 2013. **Other Rainfall Controls** are the number of last-of-the-month Sun/Mon/Tue/Wed/Thu with rainfall above  $t$  mm during the period November 2007 to September 2013 and the number of first/second/third or fourth-of-the-month Saturdays with rainfall above  $t$  mm during the period November 2007 to September 2013. There are **327 sectors** in the sample. **Standard errors** are clustered at the sector level.

**Table A.3: Alternative Rainfall Shocks**

Dependent variable:	RPF Vote Share			
Threshold:	$t = 11.2$ mm		$t = 10$ mm	
	(1)	(2)	(3)	(4)
Last Sat(Rainfall > $t$ mm), Alternative Shock	-0.155 (0.053)	-0.754 (0.282)	-0.129 (0.093)	-0.475 (0.370)
First Sat(Rainfall > $t$ mm), Alternative Shock	0.042 (0.056)	0.206 (0.276)	-0.031 (0.087)	-0.007 (0.291)
Second Sat(Rainfall > $t$ mm), Alternative Shock	0.052 (0.065)	0.114 (0.332)	0.034 (0.073)	0.110 (0.282)
Third/Fourth Sat(Rainfall > $t$ mm), Alternative Shock	-0.014 (0.074)	0.113 (0.287)	-0.039 (0.056)	-0.125 (0.218)
Last Sun-Fri(Rainfall > $t$ mm), Alternative Shock	0.033 (0.030)	0.099 (0.119)	0.016 (0.027)	0.026 (0.098)
Population Controls	yes	yes	yes	yes
Sector Effects	yes	yes	yes	yes
R <sup>2</sup>	0.50	0.49	0.49	0.49
N	1547	1560	1560	1560

Notes: **Last Sat(Rainfall >  $t$  mm), Alternative Shock** in regressions 1 and 3 are defined as the number of last Saturdays with rainfall above  $t$  mm ( $t$  given in the column header) during my period of interest minus the long-term number of last Saturdays with rainfall above  $t$  mm normalized by its long-term standard deviation (and similarly for all other Saturdays and weekdays). The long-term averages/standard deviations are calculated using the 10-year period November 1997 to November 2007. In regressions 2 and 4 I do not normalize by the standard deviation. **RPF Vote Share** is measured in percent. **Population Controls** are cell population and population density. There are **327 sectors** in the sample. **Standard errors** are clustered at the sector level.

**Table A.4:** Summary Statistics by Rainfall on Last Saturdays (11.2 mm)

	Low Rainfall	High Rainfall	p-Value
	Mean (Std.Dev.)	Mean (Std.Dev.)	
# Health care facilities	0.214 (0.479)	0.194 (0.437)	0.191
# Primary schools	1.239 (1.004)	1.200 (1.000)	0.141
# Secondary schools	0.204 (0.608)	0.201 (0.564)	0.215
# Schools	1.442 (1.233)	1.401 (1.243)	0.533
Length of local road system	15.630 (12.848)	19.017 (14.025)	0.307
# Social Housing Projects	1.643 (2.922)	1.934 (3.003)	0.935
Longitude	129.305 (46.131)	171.737 (46.622)	0.169
Latitude	9762.921 (42.765)	9773.858 (33.638)	0.170
Distance to city	15.992 (9.221)	19.412 (11.486)	0.429
Distance to Nyanza	61.523 (27.388)	65.353 (35.597)	0.509
Distance to sector headquarter	2.872 (1.843)	3.347 (1.996)	0.651
Distance to Kigali	69.551 (37.965)	54.419 (20.810)	0.739
Distance to the main road	6.589 (6.785)	7.938 (6.558)	0.644
Distance to the border	21.191 (14.673)	27.581 (14.241)	0.444
Cell area, square km	10.924 (13.113)	14.617 (29.800)	0.661
Population	4678.581 (2190.283)	4203.468 (1950.762)	0.355
Population density, per square km	1193.934 (3262.800)	404.915 (249.344)	0.719
Cell Perimeter	17.309 (8.498)	18.960 (8.826)	0.213
Level of Ruggedness	33.017 (13.931)	32.205 (13.277)	0.702
Cell under pre-colonial kingdom before 1770	0.664 (0.473)	0.544 (0.498)	0.928
Radio Rwanda signal strength	0.572 (0.495)	0.268 (0.443)	0.825
# Genocide perpetrators	339.966 (317.706)	422.514 (333.637)	0.264
Mass grave in cell	0.058 (0.234)	0.053 (0.223)	0.618

Notes: The full sample is split at the median value of Last Saturday rainfall (11.2 mm Threshold). The p-value of the test of equality of means is based on standard errors clustered at sector level and after netting out sector indicators. Note that the large difference in means for the # Genocide perpetrators is driven by a few outliers that push up the average in villages with high rainfall and not a systematic difference. If one drops those outliers, averages in both groups are around 300.

**Table A.5:** Summary Statistics by Rainfall on Last Saturdays (10 mm)

	Low Rainfall	High Rainfall	p-Value
	Mean (Std.Dev.)	Mean (Std.Dev.)	
# Health care facilities	0.208 (0.478)	0.202 (0.440)	0.766
# Primary schools	1.208 (0.938)	1.236 (1.067)	0.475
# Secondary schools	0.201 (0.614)	0.204 (0.559)	0.839
# Schools	1.409 (1.187)	1.440 (1.291)	0.632
Length of local road system	15.758 (12.517)	18.673 (14.334)	0.881
# Social Housing Projects	1.577 (2.418)	1.988 (3.447)	0.652
Longitude	128.931 (46.818)	169.587 (46.587)	0.410
Latitude	9758.620 (42.788)	9777.892 (32.239)	0.230
Distance to city	16.549 (9.947)	18.599 (10.852)	0.199
Distance to Nyanza	60.514 (27.743)	66.223 (34.715)	0.750
Distance to sector headquarter	2.900 (1.794)	3.289 (2.045)	0.509
Distance to Kigali	71.998 (37.293)	52.662 (21.737)	0.178
Distance to the main road	6.918 (7.232)	7.498 (6.092)	0.729
Distance to the border	19.749 (14.124)	28.769 (14.123)	0.483
Cell area, square km	11.043 (12.422)	14.264 (29.423)	0.888
Population	4592.334 (2073.656)	4326.236 (2118.496)	0.970
Population density, per square km	1084.144 (2834.578)	572.309 (1932.999)	0.577
Cell Perimeter	17.451 (8.407)	18.705 (8.935)	0.432
Level of Ruggedness	32.297 (13.715)	33.041 (13.562)	0.833
Cell under pre-colonial kingdom before 1770	0.677 (0.468)	0.536 (0.499)	0.534
Radio Rwanda signal strength	0.554 (0.497)	0.306 (0.461)	0.738
# Genocide perpetrators	361.550 (332.537)	394.703 (321.497)	0.075
Mass grave in cell	0.059 (0.235)	0.052 (0.223)	0.988

Notes: The full sample is split at the median value of Last Saturday rainfall (10 mm Threshold). The p-value of the test of equality of means is based on standard errors clustered at sector level and after netting out sector indicators.

**Table A.6:** Additional Standard Errors

Dependent variable: Threshold:	RPF Vote Share											
	$t = 11.2$ mm						$t = 10$ mm					
	25 km	50 km	75 km	100 km	125 km	District	25 km	50 km	75 km	100 km	125 km	District
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Last Sat(Rainfall > t mm)	-1.359 (0.396)	-1.359 (0.445)	-1.359 (0.454)	-1.359 (0.423)	-1.359 (0.375)	-1.359 (0.586)	-0.798 (0.393)	-0.798 (0.468)	-0.798 (0.499)	-0.798 (0.483)	-0.798 (0.427)	-0.798 (0.511)
First Sat(Rainfall > t mm)	0.070 (0.368)	0.070 (0.382)	0.070 (0.405)	0.070 (0.422)	0.070 (0.427)	0.070 (0.404)	-0.166 (0.311)	-0.166 (0.301)	-0.166 (0.302)	-0.166 (0.302)	-0.166 (0.309)	-0.166 (0.280)
Second Sat(Rainfall > t mm)	0.064 (0.479)	0.064 (0.423)	0.064 (0.361)	0.064 (0.362)	0.064 (0.354)	0.064 (0.559)	0.073 (0.410)	0.073 (0.375)	0.073 (0.286)	0.073 (0.266)	0.073 (0.266)	0.073 (0.392)
Third/Fourth Sat(Rainfall > t mm)	0.030 (0.428)	0.030 (0.366)	0.030 (0.303)	0.030 (0.304)	0.030 (0.274)	0.030 (0.419)	-0.056 (0.356)	-0.056 (0.341)	-0.056 (0.308)	-0.056 (0.302)	-0.056 (0.294)	-0.056 (0.359)
Last Sun-Fri(Rainfall > t mm)	-0.040 (0.165)	-0.040 (0.164)	-0.040 (0.162)	-0.040 (0.155)	-0.040 (0.142)	-0.040 (0.164)	0.042 (0.138)	0.042 (0.133)	0.042 (0.133)	0.042 (0.132)	0.042 (0.123)	0.042 (0.143)
Standard Controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Sector Effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
R <sup>2</sup>	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48
N	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560	1560

Notes: # **Last Sat(Rainfall > t mm)** is the number of last-of-the-month Saturdays with rainfall above  $t$  mm ( $t$  given in the column header) during the period November 2007 to September 2013 (and similarly for all other Saturdays, i.e., first, second, etc.). # **Last Sun-Fri(Rainfall > t mm)** is the number of last-of-the-month Sun/Mon/Tue/Wed/Thu/Fri with rainfall above  $t$  mm during the period November 2007 to September 2013. **RPF Vote Share** is measured in percent. **Standard Controls** include average daily rainfall for November 1997 to November 2007 and average daily rainfall for November 2007 to September 2013. In **regressions 1 to 5 and 7 to 11 standard errors** correcting for spatial correlation within a radius of 25km, 50km, 75km, 100km, and 125 km are in square brackets, Conley (1999). The radius used in each regression is given in the column header. In **regressions 6 and 12** I cluster at the district level. There are **327 sectors** and **25 districts** in the sample.

**Table A.7:** Robustness Check – Rainfall Weighted by Population

Dependent variable: Threshold:	RPF Vote Share			
	$t = 11.2$ mm		$t = 10$ mm	
	(1)	(2)	(3)	(4)
# Last Sat(Rainfall > $t$ mm)	−1.222 (0.431)	−1.218 (0.433)	−0.865 (0.366)	−0.862 (0.367)
# First Sat(Rainfall > $t$ mm)	−0.194 (0.389)	−0.206 (0.390)	−0.128 (0.345)	−0.134 (0.348)
# Second Sat(Rainfall > $t$ mm)	−0.111 (0.493)	−0.095 (0.489)	−0.127 (0.397)	−0.129 (0.399)
# Third/Fourth Sat(Rainfall > $t$ mm)	−0.089 (0.400)	−0.085 (0.401)	−0.102 (0.376)	−0.098 (0.378)
# Last Sun-Fri(Rainfall > $t$ mm)		−0.074 (0.179)		0.031 (0.165)
Standard Controls	yes	yes	yes	yes
Sector Effects	yes	yes	yes	yes
R <sup>2</sup>	0.48	0.48	0.48	0.48
N	1560	1560	1560	1560

Notes: **# Last Sat(Rainfall >  $t$  mm)** is the number of last-of-the-month Saturdays with rainfall above  $t$  mm ( $t$  given in the column header) during the period November 2007 to September 2013 (and similarly for all other Saturdays, i.e. first, second, etc.). **# Last Sun-Fri(Rainfall >  $t$  mm)** is the number of last-of-the-month Sun/Mon/Tue/Wed/Thu/Fri with rainfall above  $t$  mm during the period November 2007 to September 2013. **RPF Vote Share** is measured in percent. **Standard Controls** include average daily rainfall for November 1997 to November 2007 and average daily rainfall for November 2007 to September 2013. All rainfall variables used in this table are constructed by weighting the various rainfall grids that cover a cell by population instead of area. There are **327 sectors** in the sample. **Standard errors** are clustered at the sector level.

**Table A.8: Robustness Checks (11.2 mm Threshold)**

Dependent variable:	RPF Vote Share					Log [RPF Vote Share]	
	Without Main Cities	Without Kigali Prov.	Additional Controls	Without Bottom 1%	Transformed Dep. Var.		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
# Last Sat(Rainfall > 11.2 mm)	-1.331 (0.438)	-1.337 (0.439)	-1.399 (0.411)	-1.327 (0.412)	-1.295 (0.378)	-0.018 (0.007)	-0.018 (0.007)
# First Sat(Rainfall > 11.2mm)	0.132 (0.422)	0.032 (0.404)	0.097 (0.394)	0.060 (0.387)	-0.036 (0.407)	0.000 (0.006)	0.000 (0.006)
# Second Sat(Rainfall > 11.2mm)	0.116 (0.521)	0.268 (0.530)	0.116 (0.480)	0.020 (0.479)	0.300 (0.386)	-0.001 (0.008)	-0.001 (0.008)
# Third/Fourth Sat(Rainfall > 11.2mm)	0.084 (0.483)	-0.050 (0.479)	-0.015 (0.454)	-0.011 (0.455)	-0.124 (0.415)	-0.000 (0.008)	-0.000 (0.008)
# Last Sun-Fri(Rainfall > 11.2 mm)	-0.123 (0.216)	-0.056 (0.212)	-0.052 (0.202)	-0.021 (0.205)	-0.043 (0.180)	0.000 (0.004)	0.000 (0.004)
Standard Controls	yes	yes	yes	yes	yes	yes	yes
Population/Density	no	no	yes	yes	yes	no	no
Additional Controls	no	no	no	yes	yes	no	no
Sector Effects	yes	yes	yes	yes	yes	yes	yes
R <sup>2</sup>	0.46	0.47	0.49	0.50	0.51	0.44	0.44
N	1463	1421	1560	1560	1545	1560	1560

Notes: # **Last Sat(Rainfall > 11.2 mm)** is the number of last-of-the-month Saturdays with rainfall above 11.2 mm during the period November 2007 to September 2013 (and similarly for all other Saturdays, i.e. first, second, etc.). # **Last Sun-Fri(Rainfall > 11.2 mm)** is the number of last-of-the-month Sun/Mon/Tue/Wed/Thu/Fri with rainfall above 11.2 mm during the period November 2007 to September 2013. **RPF Vote Share** is measured in percent. In **regression 1** I drop cells whose centroid is closer than 5km to a main city and in **regression 2** I drop the entire Kigali City province. **Regressions 3 and 4** have additional controls. In **regression 5** I drop the 1 percent of cells with the lowest RPF vote shares. In **regressions 6 and 7** I logarithmize the dependent variable. **Standard Controls** include average daily rainfall for November 1997 to November 2007 and average daily rainfall for November 2007 to September 2013. **Population Controls** are cell population and population density. **Additional Controls** are ruggedness, and distance to main road, cities, the border, and Kigali. There are **327 sectors** in the sample. **Standard errors** are clustered at the sector level.



**Table A.9: Robustness Checks (10 mm Threshold)**

Dependent variable:	RPF Vote Share					Log [RPF Vote Share]	
	Without Main Cities	Without Kigali Prov.	Additional Controls	Without Bottom 1%	Transformed Dep. Var.		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
# Last Sat(Rainfall > 10 mm)	-0.782 (0.409)	-0.805 (0.409)	-0.801 (0.390)	-0.717 (0.398)	-0.561 (0.351)	-0.014 (0.008)	-0.014 (0.008)
# First Sat(Rainfall > 10 mm)	-0.093 (0.399)	-0.178 (0.387)	-0.087 (0.387)	-0.108 (0.380)	-0.115 (0.353)	-0.004 (0.007)	-0.004 (0.007)
# Second Sat(Rainfall > 10 mm)	0.144 (0.426)	0.264 (0.430)	0.080 (0.402)	-0.002 (0.400)	0.250 (0.345)	-0.002 (0.007)	-0.002 (0.007)
# Third/Fourth Sat(Rainfall > 10 mm)	-0.105 (0.386)	-0.262 (0.392)	-0.067 (0.358)	-0.065 (0.351)	-0.047 (0.331)	-0.002 (0.006)	-0.002 (0.006)
# Last Sun-Fri(Rainfall > 10 mm)	-0.015 (0.181)	0.027 (0.182)	0.051 (0.171)	0.075 (0.171)	0.095 (0.153)	0.001 (0.003)	0.001 (0.003)
Standard Controls	yes	yes	yes	yes	yes	yes	yes
Population/Density	no	no	yes	yes	yes	no	no
Additional Controls	no	no	no	yes	yes	no	no
Sector Effects	yes	yes	yes	yes	yes	yes	yes
R <sup>2</sup>	0.46	0.47	0.49	0.49	0.50	0.44	0.44
N	1463	1421	1560	1560	1545	1560	1560

Notes: # **Last Sat(Rainfall > 10 mm)** is the number of last-of-the-month Saturdays with rainfall above 10 mm during the period November 2007 to September 2013 (and similarly for all other Saturdays, i.e. first, second, etc.). # **Last Sun-Fri(Rainfall > 10 mm)** is the number of last-of-the-month Sun/Mon/Tue/Wed/Thu/Fri with rainfall above 10 mm during the period November 2007 to September 2013. **RPF Vote Share** is measured in percent. In **regression 1** I drop cells whose centroid is closer than 5km to a main city and in **regression 2** I drop the entire Kigali City province. **Regressions 3 and 4** have additional controls. In **regression 5** I drop the 1 percent of cells with the lowest RPF vote shares. In **regressions 6 and 7** I logarithmize the dependent variable. **Standard Controls** include average daily rainfall for November 1997 to November 2007 and average daily rainfall for November 2007 to September 2013. **Population Controls** are cell population and population density. **Additional Controls** are ruggedness, and distance to main road, cities, the border, and Kigali. There are **327 sectors** in the sample. **Standard errors** are clustered at the sector level.

**Table A.10:** Alternative Mechanism: Effects on Turnout

Dependent variable: Threshold:	Voter Turnout			
	$t = 11.2$ mm		$t = 10$ mm	
	(1)	(2)	(3)	(4)
# Last Sat(Rainfall > $t$ mm)	-0.041 (0.164)	-0.039 (0.163)	0.105 (0.129)	0.100 (0.130)
# First Sat(Rainfall > $t$ mm)	0.130 (0.123)	0.123 (0.122)	0.127 (0.151)	0.149 (0.155)
# Second Sat(Rainfall > $t$ mm)	0.020 (0.153)	0.026 (0.156)	0.187 (0.145)	0.183 (0.145)
# Third/Fourth Sat(Rainfall > $t$ mm)	0.142 (0.204)	0.146 (0.202)	0.096 (0.160)	0.086 (0.160)
# Last Sun-Fri(Rainfall > $t$ mm)		-0.038 (0.056)		-0.080 (0.054)
Standard Controls	yes	yes	yes	yes
Sector Effects	yes	yes	yes	yes
R <sup>2</sup>	0.48	0.48	0.48	0.48
N	1560	1560	1560	1560

Notes: **# Last Sat(Rainfall> $t$  mm)** is the number of last-of-the-month Saturdays with rainfall above  $t$  mm ( $t$  given in the column header) during the period November 2007 to September 2013 (and similarly for all other Saturdays, i.e. first, second, etc.). **# Last Sun-Fri(Rainfall> $t$  mm)** is the number of last-of-the-month Sun/Mon/Tue/Wed/Thu/Fri with rainfall above  $t$  mm during the period November 2007 to September 2013. **Voter Turnout** is measured in percent. **Standard Controls** include average daily rainfall for November 1997 to November 2007 and average daily rainfall for November 2007 to September 2013. There are **327 sectors** in the sample. **Standard errors** are clustered at the sector level.

**Table A.11:** Alternative Mechanism: Community Work in the Western Province

Dependent variable: Threshold:	RPF Vote Share					
	$t = 11.2$ mm			$t = 10$ mm		
	(1)	(2)	(3)	(4)	(5)	(6)
# Last Sat(Rainfall > $t$ mm)	-0.976 (0.724)		-0.976 (0.732)	-0.499 (0.552)		-0.517 (0.558)
# Thursdays(Rainfall > $t$ mm)		-0.204 (0.253)	-0.203 (0.242)		-0.284 (0.313)	-0.292 (0.315)
# First Sat(Rainfall > $t$ mm)	-0.336 (0.378)	-0.417 (0.370)	-0.393 (0.359)	-0.194 (0.359)	-0.185 (0.378)	-0.260 (0.366)
# Second Sat(Rainfall > $t$ mm)	0.633 (0.699)	0.679 (0.765)	0.677 (0.732)	0.099 (0.376)	0.290 (0.372)	0.203 (0.400)
# Third/Fourth Sat(Rainfall > $t$ mm)	-0.366 (0.707)	-0.445 (0.679)	-0.339 (0.701)	0.458 (0.608)	0.493 (0.602)	0.519 (0.591)
# Last Sun-Fri(Rainfall > $t$ mm)	0.044 (0.319)	0.070 (0.311)	0.110 (0.323)	0.003 (0.330)	0.088 (0.344)	0.073 (0.334)
Standard Controls	yes	yes	yes	yes	yes	yes
Sector Effects	yes	yes	yes	yes	yes	yes
R <sup>2</sup>	0.48	0.48	0.48	0.48	0.48	0.48
N	452	452	452	452	452	452

Notes: The sample is restricted to cells located in the Western province. **# Last Sat(Rainfall> $t$  mm)** is the number of last-of-the-month Saturdays with rainfall above  $t$  mm ( $t$  given in the column header) during the period November 2007 to September 2013 (and similarly for all other Saturdays, i.e. first, second, etc.). **# Thursdays(Rainfall> $t$  mm)** is the number of Thursdays with rainfall above  $t$  mm during the period November 2007 to September 2013 (a special *Umuganda* in the Western province takes place on Thursdays). **# Last Sun-Fri(Rainfall> $t$  mm)** is the number of last-of-the-month Sun/Mon/Tue/Wed/Thu/Fri with rainfall above  $t$  mm during the period November 2007 to September 2013. **RPF Vote Share** is measured in percent. **Standard Controls** include average daily rainfall for November 1997 to November 2007 and average daily rainfall for November 2007 to September 2013. There are **96 sectors** in the sample. **Standard errors** are clustered at the sector level.

**Table A.12: Alternative Mechanism: Income Effects**

Dependent variable:	Night Light Density, log			DHS Wealth Index			Wealth Below Median			Poorest Quintile		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	
Panel A: Threshold 11.2 mm												
Last Sat(Rainfall > 11.2 mm)	-0.017 (0.023)	-0.015 (0.023)	-0.012 (0.014)	-0.049 (0.027)	-0.051 (0.026)	0.003 (0.004)	0.012 (0.008)	0.013 (0.008)	0.002 (0.003)	0.005 (0.006)	0.005 (0.006)	
Average Rainfall, Umuganda Period	0.982 (0.498)	0.977 (0.485)	1.545 (0.641)	1.531 (0.604)	1.408 (0.581)	-0.446 (0.185)	-0.440 (0.176)	-0.399 (0.168)	-0.267 (0.156)	-0.292 (0.145)	-0.262 (0.143)	
R <sup>2</sup>	0.88	0.88	0.32	0.32	0.38	0.20	0.20	0.26	0.12	0.12	0.17	
N	1559	1559	25239	25239	25238	25239	25239	25238	25239	25239	25238	
Panel B: Threshold 10 mm												
Last Sat(Rainfall > 10 mm)	-0.001 (0.015)	-0.001 (0.016)	-0.004 (0.012)	-0.003 (0.028)	-0.009 (0.027)	0.001 (0.004)	0.002 (0.009)	0.004 (0.009)	0.000 (0.003)	-0.003 (0.007)	-0.001 (0.007)	
Average Rainfall, Umuganda Period	0.928 (0.475)	1.009 (0.506)	1.521 (0.641)	1.615 (0.615)	1.496 (0.589)	-0.442 (0.185)	-0.457 (0.177)	-0.418 (0.168)	-0.263 (0.156)	-0.310 (0.149)	-0.281 (0.146)	
R <sup>2</sup>	0.88	0.88	0.32	0.32	0.38	0.20	0.20	0.26	0.12	0.12	0.17	
N	1559	1559	25239	25239	25238	25239	25239	25238	25239	25239	25238	
Controls for both Panels												
Standard Controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	
Other Rainfall Controls	no	yes	no	yes	yes	no	yes	yes	no	yes	yes	
Household Controls	no	no	no	no	yes	no	no	yes	no	no	yes	
Sector Effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	

Notes: In **Panel A, # Last Sat(Rainfall > 11.2 mm)** is the number of last-of-the-month Saturdays with rainfall above 11.2 mm during the period November 2007 to September 2013 (adjusted for the 2010 DHS wave to only count the number of last-of-the-month Saturdays until the survey date). **RPF Vote Share** is measured in percent. **Night Light Density** is measured in 2013. The **DHS Wealth Index** is taken from the last two waves of the DHS (2010/2014) and measured at the household level. **Wealth Below Median** is a dummy variable taking on the value of one if a household has a Wealth Index below the median and similarly **Poorest Quintile** is a dummy for the poorest 20 percent of DHS households. **Standard Controls** include average daily rainfall for November 2007 to September 2013. **Other Rainfall Controls** are the number of last-of-the-month Sun/Mon/Tue/Wed/Thu/Fri with rainfall above 11.2 mm during the period November 2007 to September 2013 and the number of first/second/third or fourth-of-the-month Saturdays with rainfall above 11.2 mm during the period November 2007 to September 2013 (rainfall controls are adjusted for the 2010 DHS wave to only count the number of rainy days until the survey date). **Household Controls** are number of household members, number of kids below age 5 in the household, gender and age of the household head as well as age squared. For the variables in **Panel B** the threshold is replaced by 10 mm everywhere. There are **327 sectors** in the sample. **Standard errors** are clustered at the sector level.

**Table A.13:** Alternative Mechanism: Flooding, Interactions

Dependent variable:		RPF Vote Share					
		River/Lake		High Rainfall, Last 2 Weeks		High Rainfall, Whole Period	
		(1)	(2)	(3)	(4)	(5)	(6)
Risk factor:							
Panel A: Threshold 11.2mm							
Last Sat(Rainfall > 11.2 mm)		-1.348 (0.432)	-1.352 (0.455)	-1.320 (0.480)	-1.376 (0.519)	-1.320 (0.415)	-1.365 (0.423)
... x Risk factor		-0.007 (0.445)	-0.005 (0.404)	-0.183 (0.550)	0.064 (0.775)	-0.251 (0.513)	0.082 (0.402)
R <sup>2</sup>		0.48	0.48	0.48	0.48	0.48	0.48
N		1560	1546	1560	1560	1560	1560
Panel B: Threshold 10mm							
Last Sat(Rainfall > 10 mm)		-0.759 (0.429)	-0.733 (0.463)	-0.638 (0.429)	-0.813 (0.480)	-0.736 (0.405)	-0.817 (0.403)
... x Risk factor		-0.074 (0.413)	-0.141 (0.372)	-0.649 (0.689)	0.072 (0.601)	-0.609 (0.499)	0.373 (0.788)
R <sup>2</sup>		0.48	0.48	0.48	0.48	0.48	0.48
N		1560	1546	1560	1560	1560	1560
Controls for both Panels							
Standard Controls		yes	yes	yes	yes	yes	yes
Other Rainfall Controls		yes	yes	yes	yes	yes	yes
Sector Effects		yes	yes	yes	yes	yes	yes
R <sup>2</sup>		0.48	0.48	0.48	0.48	0.48	0.48
N		1560	1546	1560	1560	1560	1560

Notes: The Risk factor variable is given in the column header. In **Panel A**, # **Last Sat(Rainfall > 11.2 mm)** is the number of last-of-the-month Saturdays with rainfall above 11.2 mm during the period November 2007 to September 2013. **RPF Vote Share** is measured in percent. **River/Lake** is a dummy variable that takes on the value of one if there is a river or lake in the cell. **High Slope** takes on the value of one if a cell has an above median slope. **High Rainfall** takes on the value of one if a cell experienced high rainfall in the last two weeks before the *Umuganda* meeting (or the whole *Umuganda* period). **High Risk Potential** takes on the value of one if a cell both has a river/lake and steep terrain. Finally, **High Risk** takes on the value of one if a cell has high risk potential and experienced high rainfall in the last two weeks before *Umuganda* (or the whole *Umuganda* period). **Standard Controls** include average daily rainfall for November 1997 to November 2007 and average daily rainfall for November 2007 to September 2013. **Other Rainfall Controls** are the number of last-of-the-month Sun/Mon/Tue/Wed/Thu/Fri with rainfall above 11.2 mm during the period November 2007 to September 2013 and the number of first/second/third or fourth-of-the-month Saturdays with rainfall above 11.2 mm during the period November 2007 to September 2013. For the variables in **Panel B** the threshold is replaced by 10 mm everywhere. There are **327 sectors** in the sample. **Standard errors** are clustered at the sector level.

**Table A.14:** Alternative Mechanism: Flooding

Dependent variable: Risk factor:	RPF Vote Share						
	River/ Lake	Steep Slope	High Rainfall, Last 2 Weeks	High Rainfall, Whole Period	High Risk Potential	High Risk, Last 2 Weeks	High Risk, Whole Period
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<b>Panel A: Threshold 11.2 mm</b>							
Last Sat(Rainfall > 11.2 mm)	-1.351 (0.420)	-1.354 (0.425)	-1.361 (0.423)	-1.361 (0.422)	-1.356 (0.421)	-1.362 (0.420)	-1.359 (0.421)
Risk factor	-0.920 (0.804)	0.291 (0.820)	0.345 (1.824)	0.151 (1.804)	-0.520 (0.894)	-1.274 (0.986)	-1.171 (0.956)
R <sup>2</sup>	0.48	0.48	0.48	0.48	0.48	0.48	0.48
N	1560	1546	1560	1560	1560	1560	1560
<b>Panel B: Threshold 10 mm</b>							
Last Sat(Rainfall > 10 mm)	-0.781 (0.396)	-0.795 (0.402)	-0.801 (0.399)	-0.794 (0.399)	-0.790 (0.399)	-0.806 (0.399)	-0.806 (0.399)
Risk factor	-0.895 (0.799)	0.286 (0.828)	0.455 (1.458)	-0.381 (1.484)	-0.470 (0.891)	-1.384 (1.132)	-0.957 (0.987)
R <sup>2</sup>	0.48	0.48	0.48	0.48	0.48	0.48	0.48
N	1560	1546	1560	1560	1560	1560	1560
<b>Controls for both Panels</b>							
Standard Controls	yes	yes	yes	yes	yes	yes	yes
Other Rainfall Controls	yes	yes	yes	yes	yes	yes	yes
Sector Effects	yes	yes	yes	yes	yes	yes	yes
R <sup>2</sup>	0.48	0.48	0.48	0.48	0.48	0.48	0.48
N	1560	1546	1560	1560	1560	1560	1560

Notes: The Risk factor variable is given in the column header. In **Panel A**, # **Last Sat(Rainfall > 11.2 mm)** is the number of last-of-the-month Saturdays with rainfall above 11.2 mm during the period November 2007 to September 2013. **RPF Vote Share** is measured in percent. **River/Lake** is a dummy variable that takes on the value of one if there is a river or lake in the cell. **High Slope** takes on the value of one if a cell has an above median slope. **High Rainfall** takes on the value of one if a cell experienced high rainfall in the last two weeks before the *Umuganda* meeting (or the whole *Umuganda* period). **High Risk Potential** takes on the value of one if a cell both has a river/lake and steep terrain. Finally, **High Risk** takes on the value of one if a cell has high risk potential and experienced high rainfall in the last two weeks before *Umuganda* (or the whole *Umuganda* period). **Standard Controls** include average daily rainfall for November 1997 to November 2007 and average daily rainfall for November 2007 to September 2013. **Other Rainfall Controls** are the number of last-of-the-month Sun/Mon/Tue/Wed/Thu/Fri with rainfall above 11.2 mm during the period November 2007 to September 2013 and the number of first/second/third or fourth-of-the-month Saturdays with rainfall above 11.2 mm during the period November 2007 to September 2013. For the variables in **Panel B** the threshold is replaced by 10 mm everywhere. There are **327 sectors** in the sample. **Standard errors** are clustered at the sector level.