The Long-Lasting Effects of bombing on Environmental Management. Evidence from Kosovo

CHILDREN'S LIVES: INTERNATIONAL CONFERENCE ON CHILDREN AND THEIR FAMILIES USING THE MULTIPLE INDICATOR CLUSTER SURVEYS (MICS)

Elda Celislami,

University of Reading & Unito-Collegio Carlo Alberto

elda.celislami@carloalberto.org

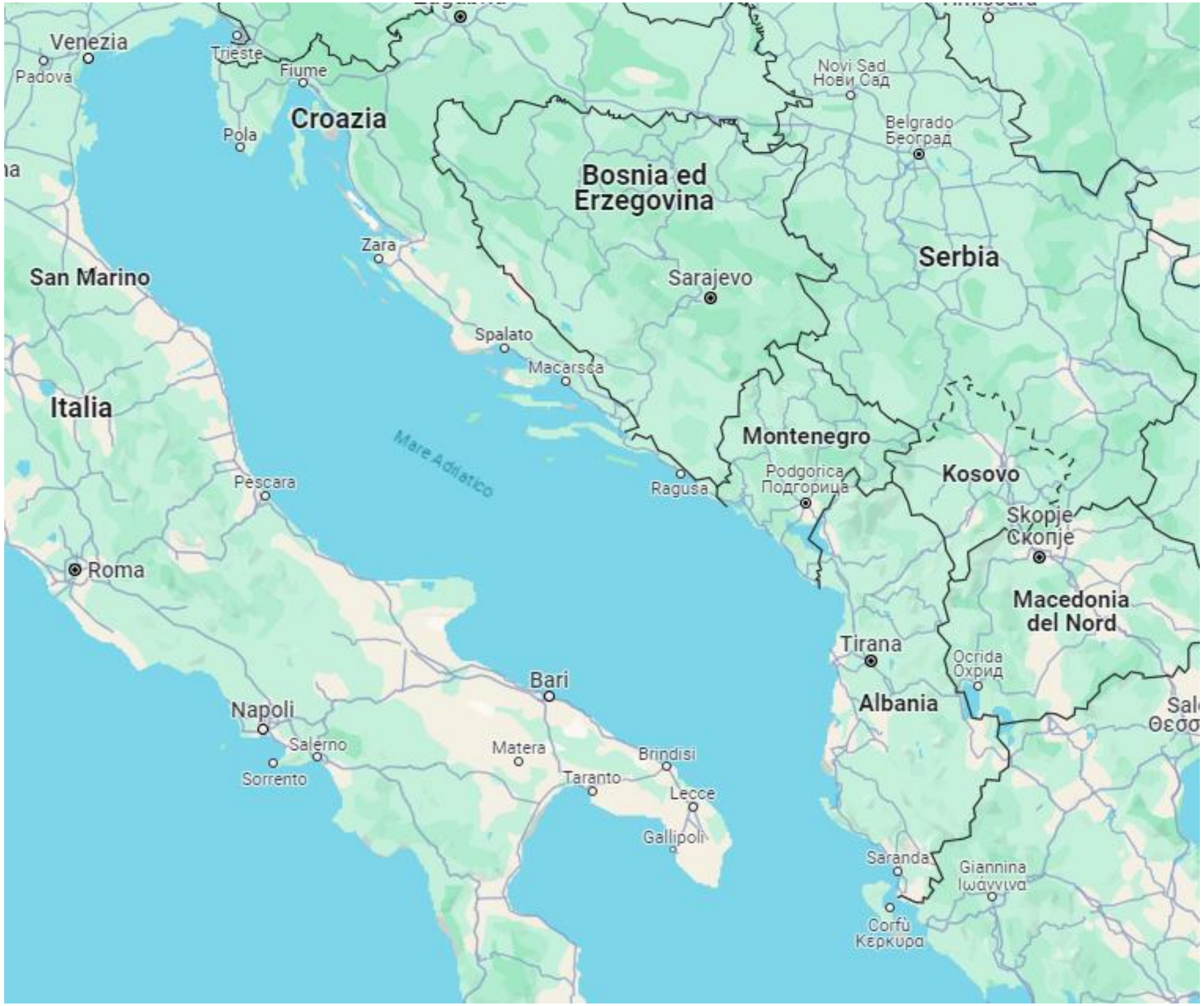
Motivation

- Investigates long-term effects of the war on waste management and infant mortality rates in Kosovo.

- Extensive research has focused on socioeconomic impacts of the Yugoslav Civil War on labour, education and child development, but environmental and public health consequences remain underexplored.

- Enhances understanding of how environmental issues affect post-war recovery dynamics and public health, contributing to broader discussions on sustainable recovery.

In the map



Venezia
Padova
Trieste
Fiume
Pola
Croazia
Bosnia ed Erzegovina
Novi Sad
Нови Сад
Belgrado
Београд
Serbia
Zara
San Marino
Sarajevo
Spalato
Macarsca
Italia
Mare Adriatico
Montenegro
Kosovo
Podgorica
Подгорица
Ragusa
Pescara
Skopje
Скопје
Roma
Macedonia del Nord
Tirana
Ocrida
Охрид
Bari
Albania
Napoli
Salerno
Sorrento
Matera
Brindisi
Taranto
Lecce
Gallipoli
Saranda
Giannina
Ιωάννινα
Corfù
Κέρκυρα

Timeline of the conflict

- 1989 - Tens of thousands of Kosovar Albanians are put out of work and the activities of their cultural organizations are restricted. Rioting ensue

- 1991/93 - Federal Republic of Yugoslavia breaks up. After a secret vote, ethnic Albanians proclaim the creation of their own Republic of Kosovo, though it earns little international recognition. "Ethnic cleansing" idea spreads in the Balkans

- 1994 - First NATO airstrike in history against Bosnian Serbs

- 1997 - Violence escalates in Kosovo as Serbian security forces clamp down further on resistance and KLA steps up its attacks. Feb 1998 armed conflict starts within Kosovo

- March 1999 - NATO intervened with an aerial bombing campaign, justifying it as a "humanitarian war“

- June 1999 - End of war, Yugoslav and Serb forces agreeing to withdraw from Kosovo to make way for an international presence

Consequences

- 13,500 people were killed or went missing
- Between 1.2 million and 1.45 million Kosovo Albanians were displaced
- By November 1999, according to the UN High Commissioner for Refugees, 848,100 out of 1,108,913 had returned (76%)
- 364 bombs hit Kosovo, the most afflicted was the capital (54)

Kosovo Waste Management Issues

- Kosovo’s waste management system faces major challenges with inadequate collection and treatment, affecting over 60% of the nation and causing significant environmental pollution and poor aesthetics.

- Insufficient cross-institutional cooperation, budget deficiencies, lack of trained staff, extensive informal sector activities, and weak law enforcement, contribute to Kosovo’s missing 2020 waste management targets (European Environment Agency, 2021).

- Of the ten landfills built post-war, only five are state-managed. For the other ones, the management is still quite ambiguous.

- Example: the Municipal Landfill of Mitrovica, was established in 1998 by the Serb authorities and was legalised in 2002 by the Danish KFOR (NATO peacekeepers).

Still, no effort was made whatsoever to regulate the dump.

Kosovo Waste Management – External financing

- After the war, the European Council established the European Agency for Reconstruction main mandate to manage the EU's aid programs in Kosovo.

- During its mandate the Agency managed a portfolio of almost 3 billion euros.

- The European Agency for Reconstruction was given a high degree of autonomy and delegated authority to streamline the delivery of EU aid to the Western Balkans region.This allowed the agency to cut bureaucratic corners and speed up the contracting and disbursement process compared to the EU's usual cumbersome procedures.

- The agency started operating in February 2000 then agreed to a dissolution right by the end of 2008.

- EU funded the design and construction of six landfills built to EU standards, aiming to replace the existing municipal dumpsites as soon as they were completed, ensuring maximum environmental protection.

Research Question

Has the violence endured during the war affected the management of infrastructures potentially creating negative externalities?

Data

- Multiple Indicator Cluster Survey (MICS) from UNICEF, combining two surveys (2012-2018) focusing on infant mortality (children under one year old)

- Focus on the waste landfills that opened after the war (ie, after 2000)

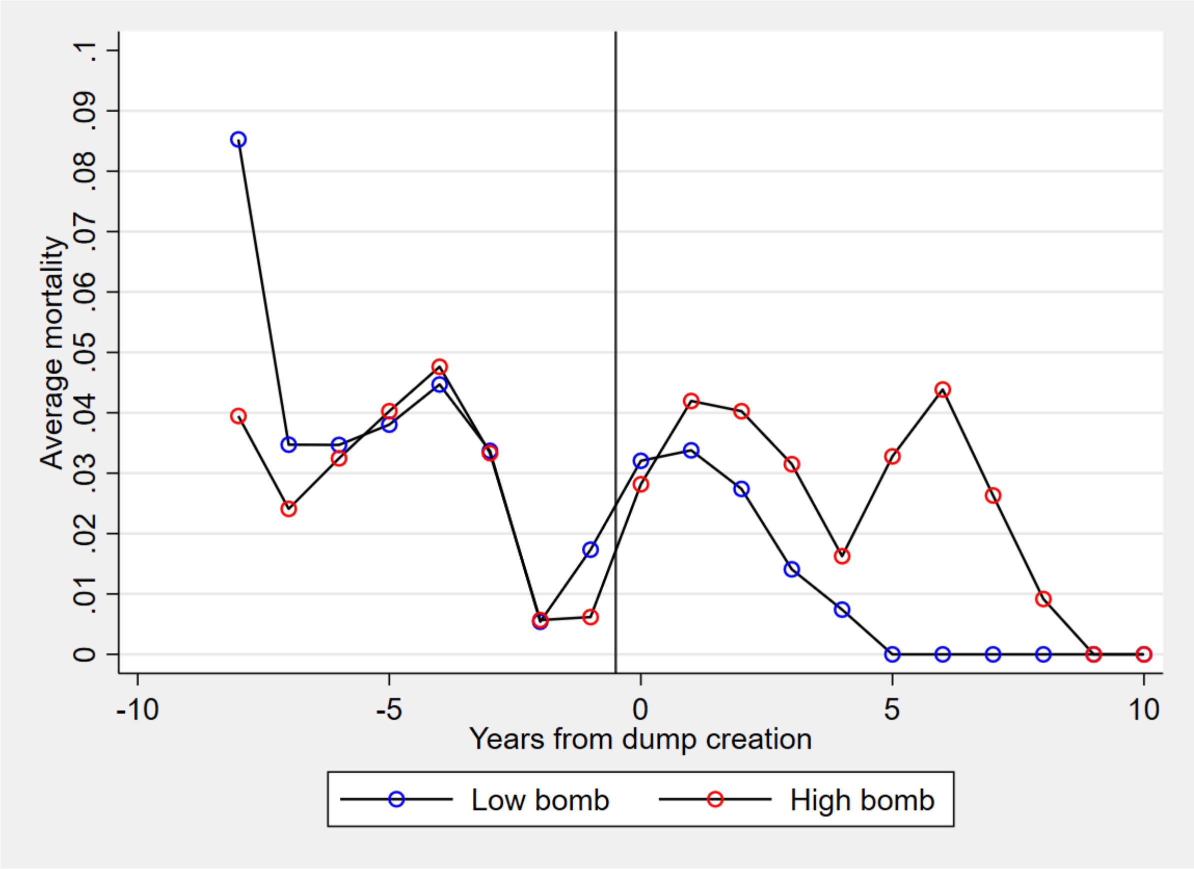
- Landfills location and openings have been received through a collection of sources.
  - The exact location of the waste landfills constructed after the conflict has been provided by the Kosovo Environmental Protection Agency (KEPA).
  - Unfortunately, their list was not exhaustive and the other landfill information such as opening year and location was retrieved by reading a collection of reports, papers and news articles.

- Count of the number of bombs hitting the region is collected at the municipality level and is sourced by the Human Rights Watch.

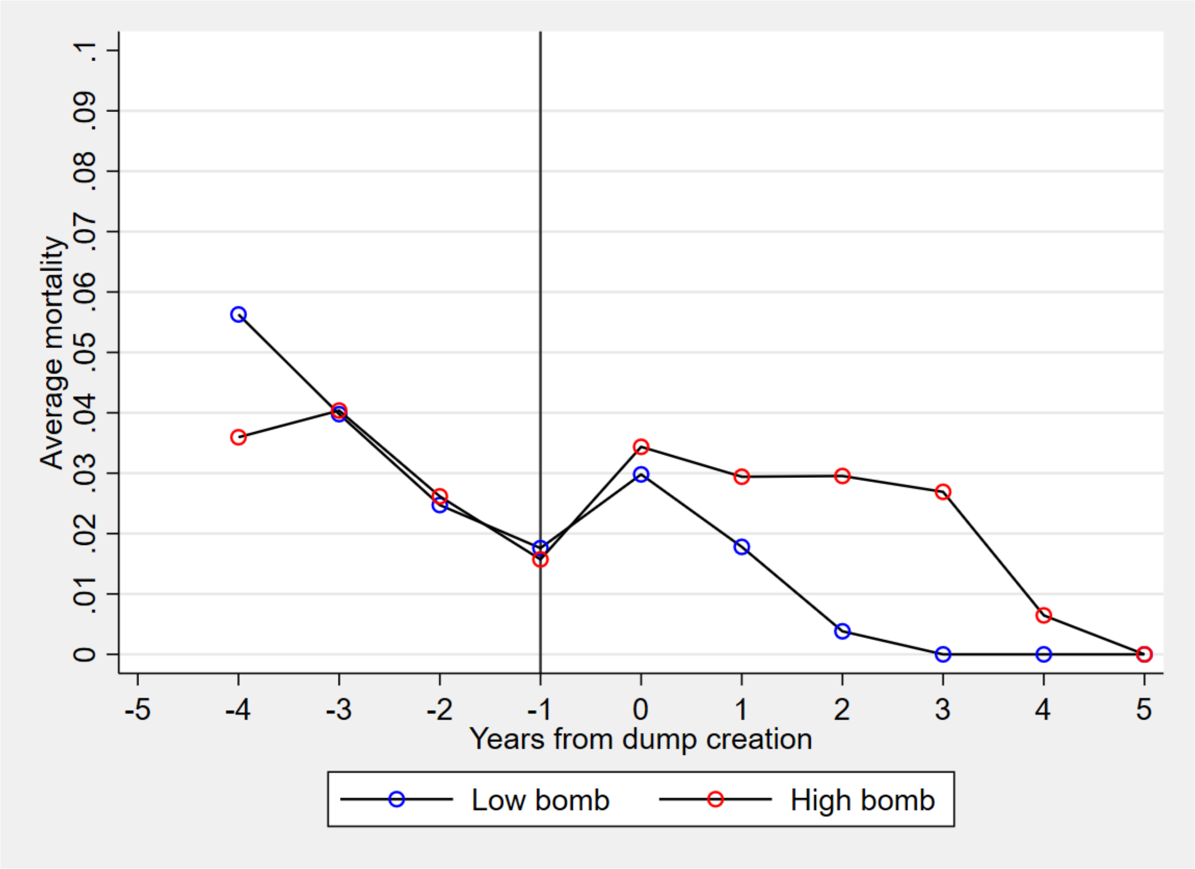
Descriptive Statistics

	All			High bomb			Close6			High bomba and close6		
Variable	Obs	Mean	Std. dev	Obs	Mean	Std. dev	Obs	Mean	Std. dev	Obs	Mean	Std. dev
infant_m	5,373	0.028662	0.16687	2,601	0.032295	0.176817	2,945	0.028183	0.165525	1,455	0.030241	0.171307
postdump	5,373	0.440908	0.496542	2,601	0.444444	0.497	2,945	0.41528	0.492854	1,455	0.418557	0.493492
high_bomb	5,373	0.484087	0.499793	2,601	1	0	2,945	0.494058	0.50005	1,455	1	0
close6	5,373	0.548111	0.497726	2,601	0.5594	0.496555	2,945	1	0	1,455	1	0
rural	5,373	0.520007	0.499646	2,601	0.597847	0.490427	2,945	0.395925	0.489132	1,455	0.476976	0.499641
ethnicity	5,373	1.227433	0.829473	2,601	1.324875	1.013084	2,945	1.240407	0.834015	1,455	1.335395	1.018511
edu_none	5,373	0.026242	0.15987	2,601	0.024606	0.154951	2,945	0.027844	0.164553	1,455	0.026804	0.161566
edu_primary	5,373	0.051368	0.220768	2,601	0.057286	0.232432	2,945	0.045501	0.208435	1,455	0.053608	0.22532
edu_low_se~d	5,373	0.545505	0.497971	2,601	0.611688	0.48746	2,945	0.52326	0.499544	1,455	0.595189	0.491024
edu_up_sec~d	5,373	0.262796	0.440193	2,601	0.226067	0.418363	2,945	0.279796	0.448975	1,455	0.24055	0.427564
wealth_poor	5,373	0.215522	0.411222	2,601	0.244137	0.429657	2,945	0.20747	0.405564	1,455	0.238488	0.426306
wealth_low~e	5,373	0.195422	0.396562	2,601	0.218378	0.413224	2,945	0.178608	0.383089	1,455	0.191065	0.393276
wealth_up_~e	5,373	0.194305	0.395701	2,601	0.205306	0.404003	2,945	0.188795	0.391412	1,455	0.209622	0.407179
wealth_rich	5,373	0.193188	0.394836	2,601	0.167628	0.373607	2,945	0.194907	0.396196	1,455	0.183505	0.387213
year_open	5,373	2005.084	2.776578	2,601	2004.199	1.889326	2,945	2005.792	3.054387	1,455	2004.772	2.042237

Average infant mortality and rolling window



(a) 2 years average infant mortality



(b) 2 years rolling window mortality

Difference in Difference (in Difference)

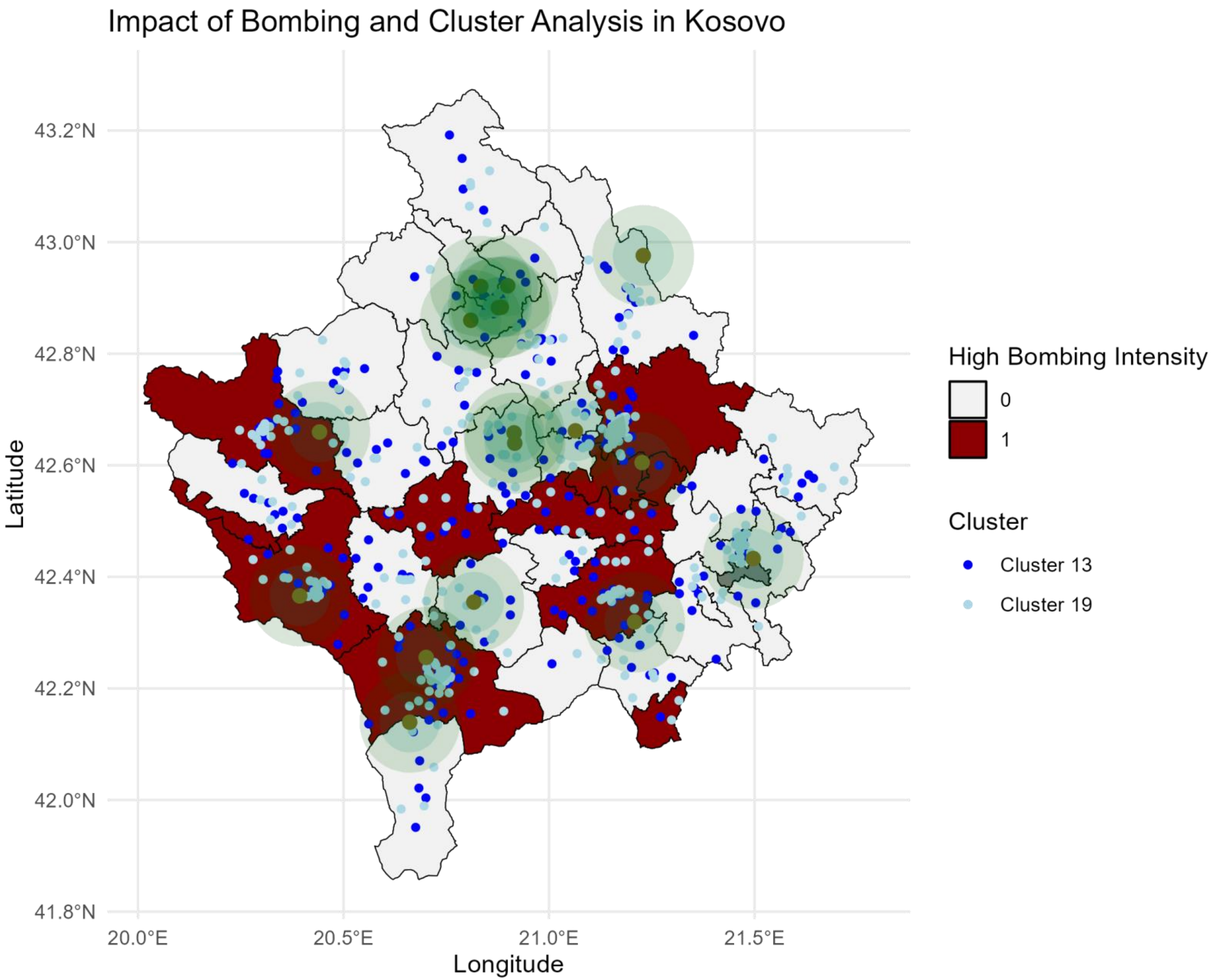
DD (restricted to 6km)

$$\begin{aligned}\text{infant mortality}_{it} = \beta_0 + \beta_1 \text{postdump}_{it} + \beta_2 \text{high\_bomb}_i \\ + \beta_3 \text{postdump}_{it} \times \text{high\_bomb}_i + \beta_4 X_{it} + \epsilon\end{aligned} \tag{1}$$

DDD

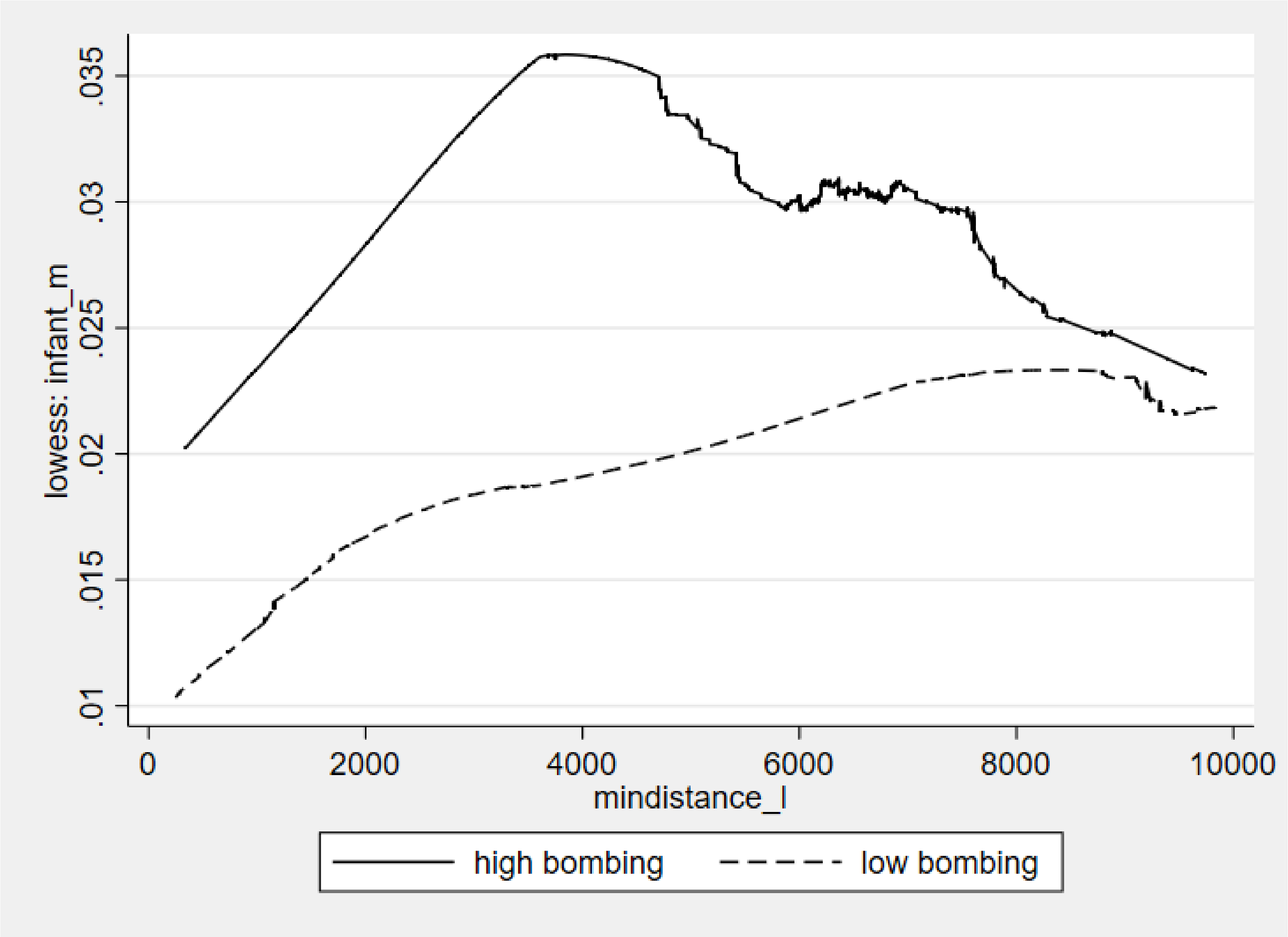
$$\begin{aligned}\text{infant mortality}_{it} = &\beta_0 + \beta_1 \text{postdump}_{it} + \beta_2 \text{high\_bomb}_i + \beta_3 \text{close6}_{it} \\ &\beta_4 \cdot (\text{postdump}_{it} \times \text{high\_bomb}_i) + \beta_5 \cdot (\text{postdump}_{it} \times \text{close6}_{it}) + \\ &\beta_6 \cdot (\text{high\_bomb}_i \times \text{close6}_{it}) + \\ &\beta 7 \cdot (\text{postdump}_{it} \times \text{high\_bomb}_i \times \text{close6}_{it}) + \\ &\beta_8 X_{it} + \epsilon_{it}\end{aligned}$$

Map



Impact of Bombing and Cluster Analysis in Kosovo
43.2°N
43.0°N
42.8°N
42.6°N
42.4°N
42.2°N
42.0°N
41.8°N
Latitude
20.0°E
20.5°E
21.0°E
21.5°E
Longitude
High Bombing Intensity
0
1
Cluster
Cluster 13
Cluster 19

Lowess



.01
.015
.02
.025
.03
.035
lowess: infant_m
0
2000
4000
6000
8000
10000
mindistance_l
high bombing
low bombing

Event Study Result – Callaway SantAnna

	Coefficient	Std. err	Z	P>|z|	95% conf. interval	
ATT	0.039337	0.008191	4.8	0.000	0.023282	0.055391
Pre_avg	-0.0299	0.008952	-3.34	0.001	-0.04745	-0.01236
Post_avg	0.038765	0.008302	4.67	0.000	0.022493	0.055036

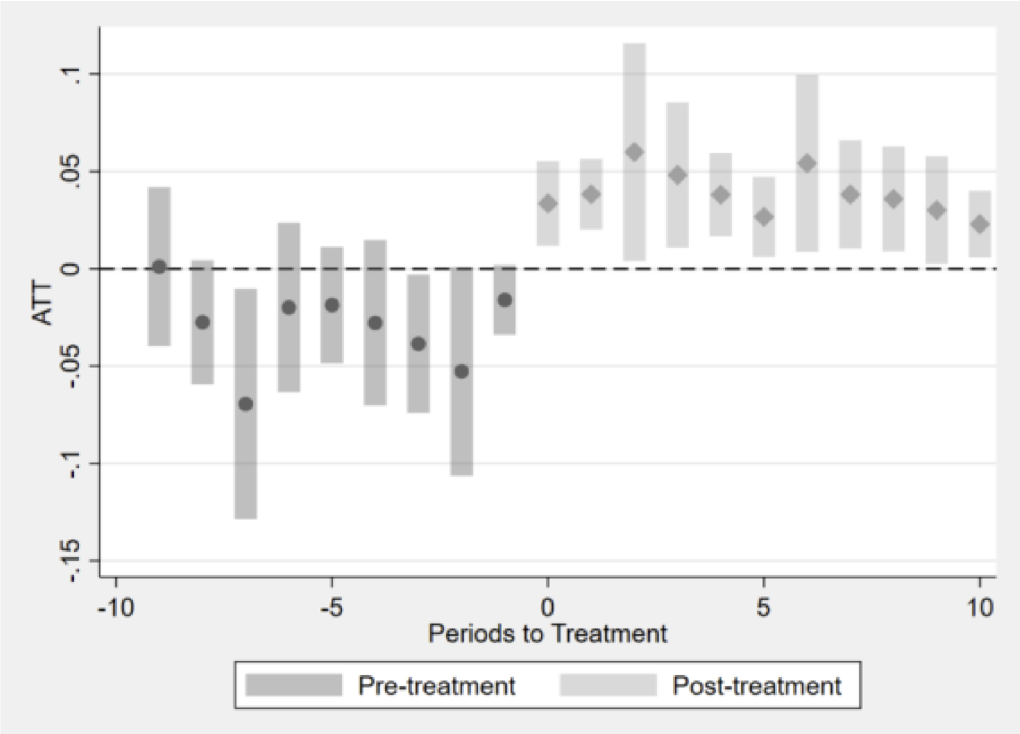
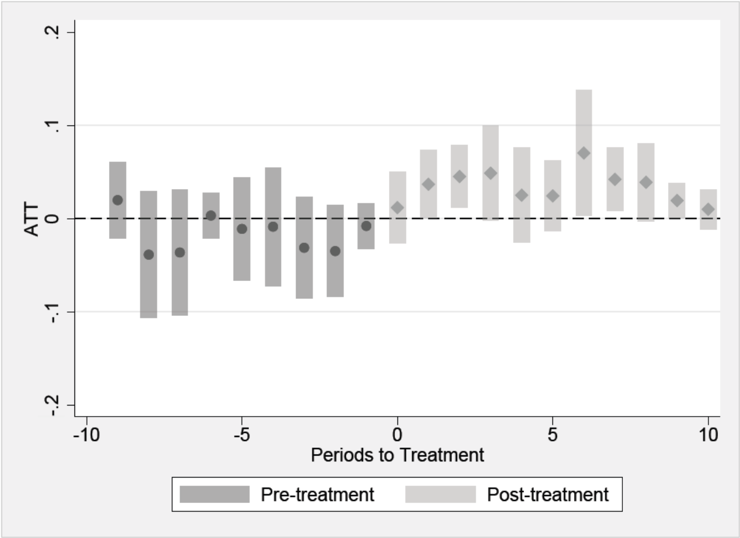
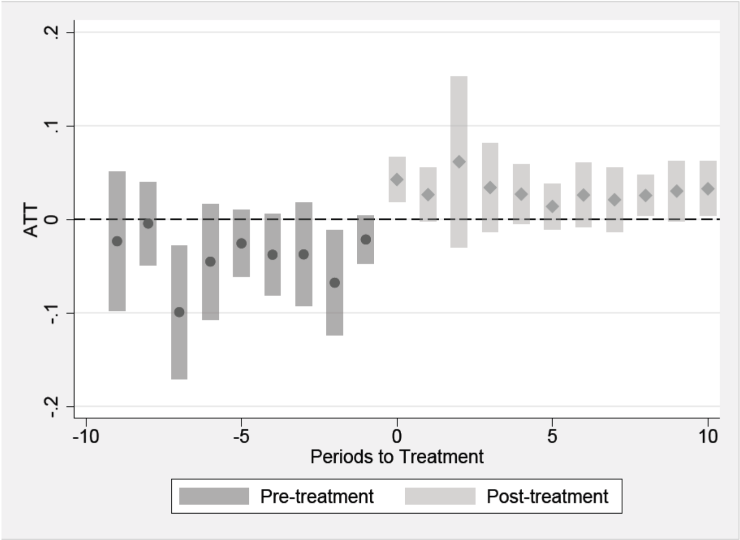


Figure: Event Study without Covariate

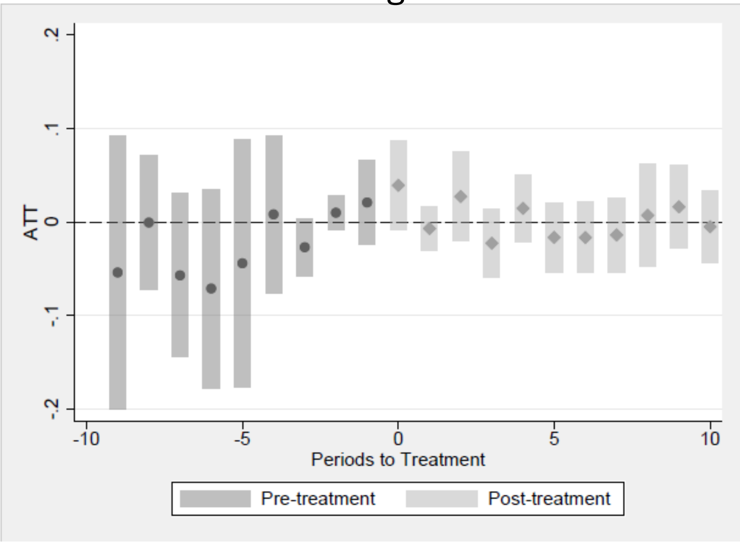
Callaway SantAnna on close and high bombed combied



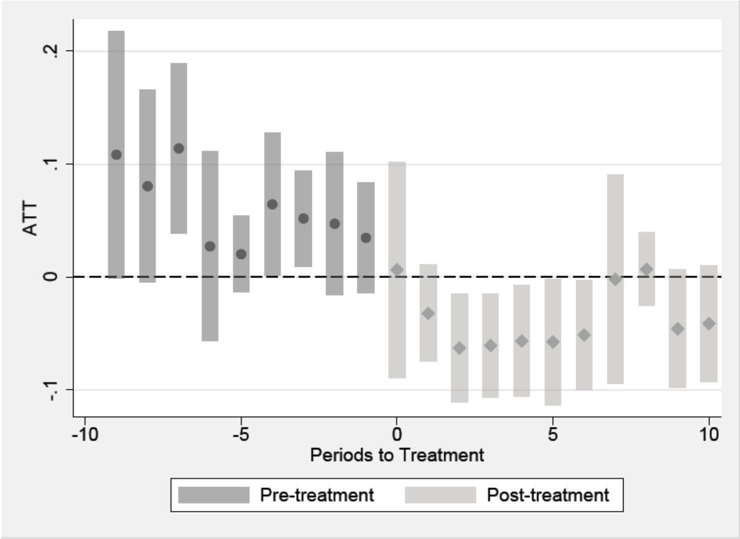
close6 = 1 and highbomb=1



close6 = 1 and highbomb=0



close6 = 0 and highbomb=1



close6 = 0 and highbomb=0

DDD and DD

Panel A: D×D×D			
infant mortality	(1)	(2)	(3)
postdump	-0.005	-0.015	-0.003
	(0.013)	(0.015)	(0.018)
high bomb	0.007	0.004	0.002
	(0.010)	(0.016)	(0.017)
postdump×high bomb	-0.015	-0.011	-0.010
	(0.011)	(0.016)	(0.017)
close6	0.007	0.000	0.009
	(0.008)	(0.007)	(0.016)
postdump×close6	-0.003	0.002	-0.005
	(0.010)	(0.011)	(0.017)
high bomb×close6	-0.018*	-0.028*	-0.001
	(0.010)	(0.015)	(0.016)
postdump×high bomb×close6	0.032***	0.040**	0.016
	(0.011)	(0.016)	(0.020)
Covariates	X	X	X
Birth Year FE	X	X	X
N	5373	3249	2564
N_clust	26	17	18

Panel B: D×D			
infant mortality	(1)	(2)	(3)
postdump	0.001	-0.004	-0.005
	(0.011)	(0.013)	(0.009)
high bomb	-0.012	-0.031***	-0.001
	(0.008)	(0.006)	(0.007)
postdump×high bomb	0.018	0.040***	0.009
	(0.011)	(0.009)	(0.010)
Covariates	X	X	X
Child Birth Year FE	X	X	X
N	2944	1799	1383
N_clust	15	8	11

Notes: The table displays coefficients with p < 0.1, ** p < 0.05, *** p < 0.01, followed by standard errors in parentheses. The infant mortality mean for panel A is 0.0287 while for pane B is 0.0281
Panel A represents the triple difference in difference while the simple difference in difference is reported in Panel B. Panel B sample is obtained by subsampling the children living within 6 km to a waste landfill. Furthermore, it also includes weights to account for children born in places with more than one dump within 6 km. The table shows the results for infant mortality considering (1) all the waste landfills; (2) the landfills constructed with external funding (European Reconstruction Agency) ; (3) the waste landfills constructed with internal funding.

External Funding

Panel A: D×D×D						
infant mortality	(1)	(2)	(3)	(4)	(5)	(6)
postdump	-0.024**	-0.021**	-0.019*	-0.015	-0.019*	-0.019*
	(0.009)	(0.010)	(0.010)	(0.015)	(0.009)	(0.010)
high bomb	0.007	0.005	-0.015	0.004	-0.017	
	(0.016)	(0.015)	(0.014)	(0.016)	(0.014)	
postdump×high bomb	-0.008	-0.010	-0.012	-0.011	-0.011	-0.012
	(0.017)	(0.016)	(0.016)	(0.016)	(0.015)	(0.016)
close6_era	-0.003	-0.001	-0.006	0.000	-0.009	-0.006
	(0.009)	(0.008)	(0.007)	(0.007)	(0.007)	(0.008)
postdump×close6_era	0.005	0.003	-0.000	0.002	-0.000	-0.000
	(0.010)	(0.010)	(0.011)	(0.011)	(0.009)	(0.011)
high bomb×close6 _era	-0.027*	-0.027*	-0.020	-0.028*	-0.018	-0.020
	(0.015)	(0.015)	(0.013)	(0.015)	(0.013)	(0.013)
postdump×high bomb×close6 _era	0.038**	0.040**	0.042***	0.040**	0.042***	0.042***
	(0.015)	(0.015)	(0.014)	(0.016)	(0.013)	(0.014)
Covariates		X	X	X	X	X
Dump Opening year FE			X			
Child Birth Year FE				X		
Region FE					X	
Waste landfill FE						X
N	3249	3249	3249	3249	3249	3249
N_clust	17	17	17	17	17	17
Panel B: D×D						
infant mortality	(1)	(2)	(3)	(4)	(5)	(6)
postdump	-0.019***	-0.023***	-0.021***	-0.004	-0.022***	-0.021***
	(0.005)	(0.005)	(0.005)	(0.013)	(0.005)	(0.005)
high bomb	-0.019***	-0.024***	-0.027***	-0.031***	-0.027***	
	(0.004)	(0.003)	(0.006)	(0.006)	(0.005)	
postdump×high bomb	0.030***	0.035***	0.033***	0.040***	0.033***	0.033***
	(0.006)	(0.007)	(0.006)	(0.009)	(0.006)	(0.006)
Covariates		X	X	X	X	X
Dump Opening year FE			X			
Child Birth Year FE				X		
Region FE					X	
Waste landfill FE						X
N	1800	1935	1800	1799	1800	1800
N_clust	8	8	8	8	8	8

Notes: The table displays coefficients with p < 0.1, ** p < 0.05, *** p < 0.01 , followed by standard errors in parentheses. Panel A represents the triple difference in difference while the simple difference in difference is reported in Panel B. Panel B sample is obtained by subsampling the children living within 6 km to a waste landfill. Furthermore, it also includes weights to account for children born in places with more than one dump within 6 km. The table shows the results for infant mortality where (1) represents the triple difference in difference without covariates or fixed effects; (2) is the same as the previous one with covariates; (3) contains waste landfill opening years fixed effects; (4) contains birth year fixed effects; (5) has regional fixed effects: and (6) with waste landfill fixed effects

Water test

$$\begin{aligned}\text{water\_test}_i = {} & \beta_0 + \beta_1 \text{ high\_bomb}_i + \beta_2 \text{ close6}_i + \beta_3 \text{ high\_bomb}_i \times \text{close6}_i + \\ & \beta_4 \text{ piped\_water}_i + \beta_5 \text{ publictap\_water}_i + \beta_6 \text{ well\_water}_i + \\ & \beta_7 \text{ spring\_water}_i + \gamma_{Nr} + \epsilon_i\end{aligned}$$

$$\begin{aligned}\log(\text{water\_test}_i) = {} & \beta_0 + \beta_1 \text{ high\_bomb}_i + \beta_2 \text{ close6}_i + \beta_3 \text{ high\_bomb}_i \times \text{close6}_i + \\ & \beta_4 \text{ piped\_water}_i + \beta_5 \text{ publictap\_water}_i + \beta_6 \text{ well\_water}_i + \\ & \beta_7 \text{ spring\_water}_i + \gamma_{Nr} + \epsilon_i\end{aligned}$$

Water test - Results

	All			External funding			Internal funding		
E.Coli count	OLS	Poisson	Neg Bin	OLS	Poisson	Neg Bin	OLS	Poisson	Neg Bin
high bomb	2.038	0.148***	-0.583	-2.806**	-1.206***	-2.278***	-1.945	0.323***	-0.317
	(1.373)	(0.052)	(0.597)	(1.267)	(0.097)	(0.675)	(1.977)	(0.063)	(0.537)
close6	0.211	-0.214***	1.849***	-2.431*	0.235***	0.464	-5.508***	-0.540***	2.935***
	(1.347)	(0.054)	(0.625)	(1.347)	(0.078)	(0.621)	(2.063)	(0.081)	(0.640)
high_bomb×close6	-0.344	0.536***	0.460	5.451***	2.518***	1.380	5.103*	0.195*	-1.449**
	(1.641)	(0.070)	(0.672)	(1.796)	(0.132)	(0.858)	(2.635)	(0.111)	(0.735)
w_drink_piped	-1.383	-0.812***	-0.846*	-1.390	-0.942***	1.981***	0.958	1.300**	-0.325
	(1.355)	(0.088)	(0.481)	(1.504)	(0.112)	(0.759)	(2.524)	(0.507)	(0.993)
w_drink_publictab	-2.486	-1.615***	-0.024	-7.762*	-4.118***	1.101	-2.156	-0.339	-0.701
	(3.427)	(0.316)	(1.101)	(4.032)	(1.011)	(2.175)	(4.334)	(0.597)	(1.194)
w_drink_well	11.581***	1.475***	3.061***	7.160***	0.455***	4.523***	14.168***	3.116***	3.104***
	(1.712)	(0.089)	(0.582)	(2.131)	(0.124)	(1.115)	(2.945)	(0.507)	(0.934)
w_drink_spring	1.228	0.320***	4.272***	24.802***	1.918***	9.530***	6.955*	2.884***	2.654**
	(2.151)	(0.102)	(0.896)	(3.746)	(0.153)	(1.528)	(3.761)	(0.511)	(1.175)
rural	1.870**	0.864***	1.411***	3.874***	2.320***	2.626***	0.755	2.068***	2.966***
	(0.875)	(0.051)	(0.303)	(1.035)	(0.086)	(0.453)	(1.630)	(0.135)	(0.541)
lnalpha			2.517***			2.255***			1.893***
			(0.081)			(0.121)			(0.112)
N	1298	1298	1298	720	720	720	630	630	630
Mean	3.220			2.465			3.914		
Predicted value	3.176	3.178	19.647	3.453	3.082	278.695	3.738	3.553	31.498

Notes: The table displays coefficients with standard errors in parentheses.
$*p < 0.1 * *p < 0.05$, $^{***}\ p < 0.01$.

Corruption

- UNDP and USAID biannual survey – June 2010 to March 2020
- Focus on perception of corruption in local government, central government and international organizations
- The variables are coded as zero if the respondent perceives the institution to have no or minimal corruption, and as one if the institution is perceived to experience moderate to severe corruption.
- Wastelands can be of two types: internally funded or externally funded
- X are individual controls such as ethnicity, employment, age, schooling years, marital status and if they live in an urban or rural area.

$$\text{corruption\_institution}_{it} = \beta_0 + \beta_1 \text{high\_bomb}_i + \beta_2 \text{wasteland}_i + \beta_3 (\text{high\_bomb}_{it} \times \text{wasteland}_{it}) + \text{X}_{it} + \gamma_t + \epsilon_{it}$$

Corruption result

	corruption_localgov		corruption_central_gov		corruption_international_org	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: 1.high_bomb						
high_bomb	-0.030***	-0.026**	0.022**	0.031***	0.107***	0.110***
	(0.010)	(0.010)	(0.009)	(0.009)	(0.015)	(0.015)
wastelansfill	-0.053***	-0.045***	-0.016**	-0.003	-0.074***	-0.066***
	(0.009)	(0.009)	(0.008)	(0.008)	(0.013)	(0.013)
1.high_bomb×wasteland	0.072***	0.074***	-0.031**	-0.032**	-0.067***	-0.068***
	(0.015)	(0.015)	(0.013)	(0.013)	(0.022)	(0.022)
N	18967	18967	18108	18108	9996	9996
Controls	X	X	X	X	X	X
Year FE		X		X		X
Panel B: extern vs intern fund						
high_bomb	-0.030***	-0.025**	0.022**	0.031***	0.110***	0.113***
	(0.010)	(0.010)	(0.009)	(0.009)	(0.015)	(0.015)
wl_ext_fund	-0.028***	-0.021**	-0.013	-0.001	-0.061***	-0.052***
	(0.010)	(0.010)	(0.009)	(0.009)	(0.016)	(0.016)
wl_intern_fund	-0.095***	-0.085***	-0.022*	-0.005	-0.099***	-0.091***
	(0.013)	(0.013)	(0.012)	(0.012)	(0.020)	(0.020)
high_bomb×wl_ext_fund	0.045***	0.052***	-0.042***	-0.032**	-0.045*	-0.041
	(0.017)	(0.017)	(0.016)	(0.015)	(0.027)	(0.027)
high_bomb×wl_intern_fund	0.115***	0.108***	-0.016	-0.031*	-0.076***	-0.081***
	(0.019)	(0.019)	(0.018)	(0.018)	(0.029)	(0.028)
N	18967	18967	18108	18108	9996	9996
Controls	X	X	X	X	X	X
Year FE		X		X		X
outcome mean	0.698	0.698	0.793	0.793	0.603	0.603

Corruption descriptive stats

Variable	all			high bomb			low bomb			highbomb& no wl			highbomb& wl		
	Obs	Mean	Std.dev.	Obs	Mean	Std.dev.	Obs	Mean	Std.dev.	Obs	Mean	Std.dev.	Obs	Mean	Std.dev.
high_bomb	22,805	0.338084	0.473068	7,710	1	0	15,095	0	0	3,433	1	0	4,277	1	0
wasteland	23,663	0.386299	0.486911	7,710	0.554734	0.497027	15,095	0.322226	0.467345	3,433	0	0	4,277	1	0
rural	23,663	0.514854	0.49979	7,710	0.463684	0.498712	15,095	0.543889	0.498087	3,433	0.342849	0.474731	4,277	0.560673	0.496363
ethn_alb	23,657	0.664581	0.472147	7,708	0.68137	0.465975	15,091	0.681068	0.466078	3,433	0.794349	0.404235	4,275	0.590643	0.491773
ethn_serb	23,657	0.177072	0.381738	7,708	0.135963	0.342771	15,091	0.167385	0.373331	3,433	0.087387	0.282443	4,275	0.174971	0.379987
ethn_other	23,663	0.157419	0.364203	7,710	0.18249	0.386273	15,095	0.150315	0.357391	3,433	0.117973	0.322623	4,277	0.234276	0.423595
empl_public	23,510	0.130668	0.337044	7,694	0.131921	0.338427	14,983	0.121271	0.326453	3,431	0.146605	0.353763	4,263	0.120103	0.32512
empl_private	23,510	0.186814	0.389771	7,694	0.216142	0.411639	14,983	0.175332	0.380264	3,431	0.232294	0.422357	4,263	0.203143	0.402386
empl_noregular	23,510	0.044832	0.206939	7,694	0.037822	0.190777	14,983	0.045719	0.208881	3,431	0.031478	0.17463	4,263	0.042928	0.202718
empl_pension	23,510	0.089366	0.285278	7,694	0.087341	0.282352	14,983	0.09117	0.28786	3,431	0.074614	0.262806	4,263	0.097584	0.296786
empl_homecare	23,510	0.158954	0.365641	7,694	0.156746	0.363584	14,983	0.165521	0.371662	3,431	0.129117	0.335378	4,263	0.178982	0.383382
empl_student	23,510	0.082731	0.275481	7,694	0.0902	0.286487	14,983	0.078823	0.269471	3,431	0.097639	0.296869	4,263	0.084213	0.27774
empl_other	23,510	0.008082	0.089536	7,694	0.007668	0.087238	14,983	0.007809	0.088025	3,431	0.006995	0.083356	4,263	0.00821	0.090248
age	23,563	40.49315	15.94584	7,704	40.11397	15.8582	15,022	40.7927	16.03593	3,431	39.25823	15.59813	4,273	40.80108	16.03276
schooling_years	23,663	11.40126	3.571747	7,710	11.55824	3.449342	15,095	11.27605	3.605888	3,433	11.79085	3.387719	4,277	11.37152	3.487203
marital_status	23,541	2.447729	9.710182	7,693	2.156116	8.108545	15,001	2.488701	9.959894	3,422	2.118352	7.835548	4,271	2.186373	8.321604
income	22,641	105.9069	227.8784	7,495	98.35304	197.5032	14,361	111.7483	245.7264	3,282	117.1767	217.0476	4,213	83.68906	179.4835
male	23,663	0.510755	0.499895	7,710	0.511025	0.499911	15,095	0.50891	0.499937	3,433	0.525488	0.499423	4,277	0.499416	0.500058