

## Online Appendix

Distortions in aid allocation of United Nations flash appeals:

Evidence from the 2015 Nepal earthquake

*World Development*

Vera Z. EICHENAUER, Andreas FUCHS, Sven KUNZE, and Eric STROBL

### Appendix 1: Timeline of the 2015 Nepal Earthquake Flash Appeal

Date	Event
2015-04-25	Earthquake (7.8 Magnitude) (major shake)
2015-04-25	Aftershock (6.6 Magnitude)
2015-04-25	Aftershock (6.7 Magnitude)
2015-04-26	Aftershock (6.7 Magnitude)
2015-04-29	Launch of initial Flash Appeal (April-July, US\$ 415 million)
2015-04-29	First aid reaches Nepal
2015-05-04	Update of initial Flash Appeal document
2015-05-12	Earthquake (7.3 Magnitude) (major aftershock)
2015-05-29	Launch of revised Flash Appeal (April-September, US\$ 422 million)
2015-06-13	Arrival of Monsoon season
2015-09-20	Constitution of Nepal came into effect
2015-09-30	End of revised relief phase (due to monsoon season)
2015-10-11	Change of government

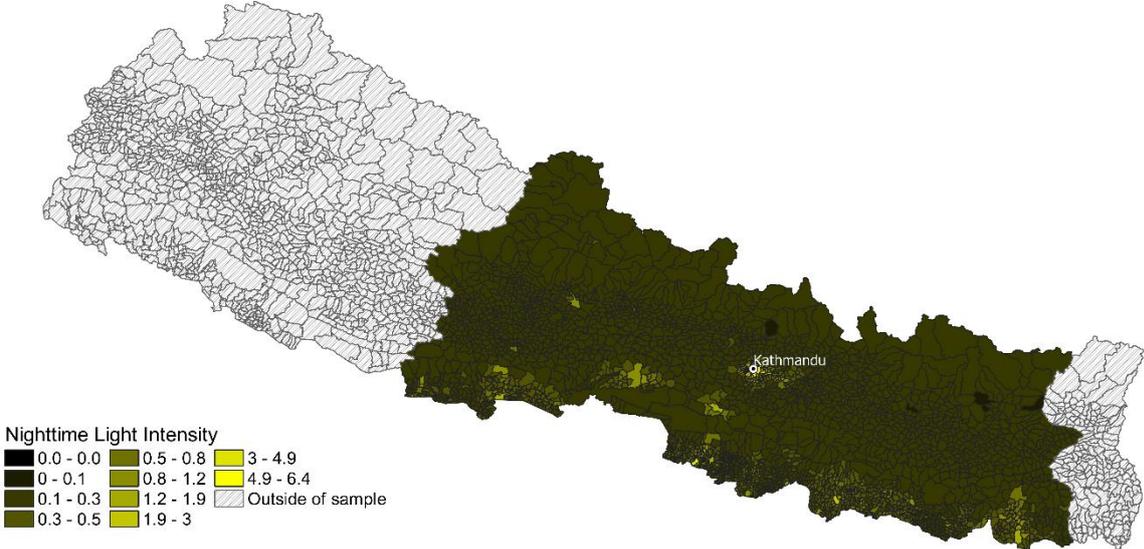
Source: [UNOCHA \(2015a, 2015b\)](#), [Bhattacharjee \(2016\)](#), internet research.

**Appendix 2:** List of the 20 largest funded 2015 Nepal earthquake flash appeal projects (in million USD)

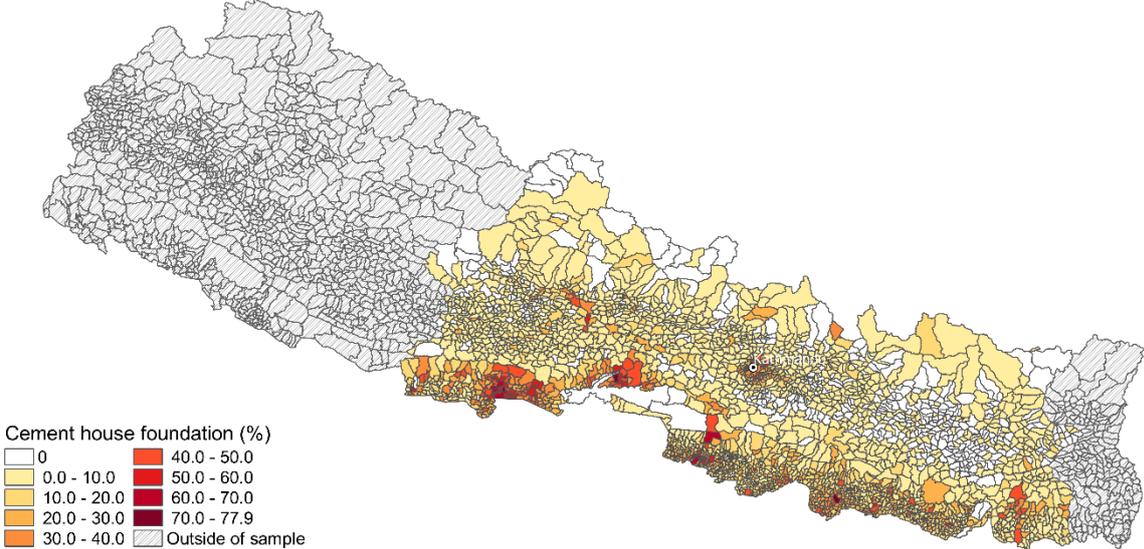
Emergency Food Assistance to Earthquake Affected Populations	23.1
Logistics Augmentation and Coordination in Response to the Earthquake in Nepal	14.8
Provide live saving emergency Water, Sanitation and Hygiene services for earthquake affected population, especially women and children in Nepal	14.0
Provision of Emergency Shelter, Non Food Items (NFI) and shelter support to self-recovery to Earthquake Affected Population in Nepal for 25,000 Vulnerable Households	12.8
Provision of Humanitarian Air Services in Nepal	11.2
Provision of Education in Emergencies to Earthquake-Affected Children in Nepal	10.4
Equitable emergency and lifesaving primary health care services for mothers, newborns and children	10.1
Shelter support through NFIs and training	8.7
Emergency Shelter	7.0
Addressing health needs in the earthquake affected population	6.6
Comprehensive Emergency Nutrition Response for Children and Mothers	5.6
Prevention and response to protect children in affected areas.	5.3
Emergency assistance to re-establish agricultural-based livelihoods of vulnerable earthquake-affected smallholder farmers in the six most affected districts in Nepal	5.2
Emergency and transitional shelter assistance to earthquake-affected populations	4.4
Protection monitoring, legal and psychosocial support to people affected by earthquake	4.0
Oxfam WASH Earthquake Response	3.6
Rehabilitation of community based infrastructure and emergency employment for immediate livelihoods support	3.5
Shelter assistance for 20,000 most vulnerable earthquake-affected families	3.4
Coordination response	3.3
To deliver a shelter response that supports appropriate, flexible, progressive solutions to affected, vulnerable populations that contributes to their own self recovery to provide a safer, more resilient and durable shelter	3.2

Data source: [UNOCHA \(2016\)](#).

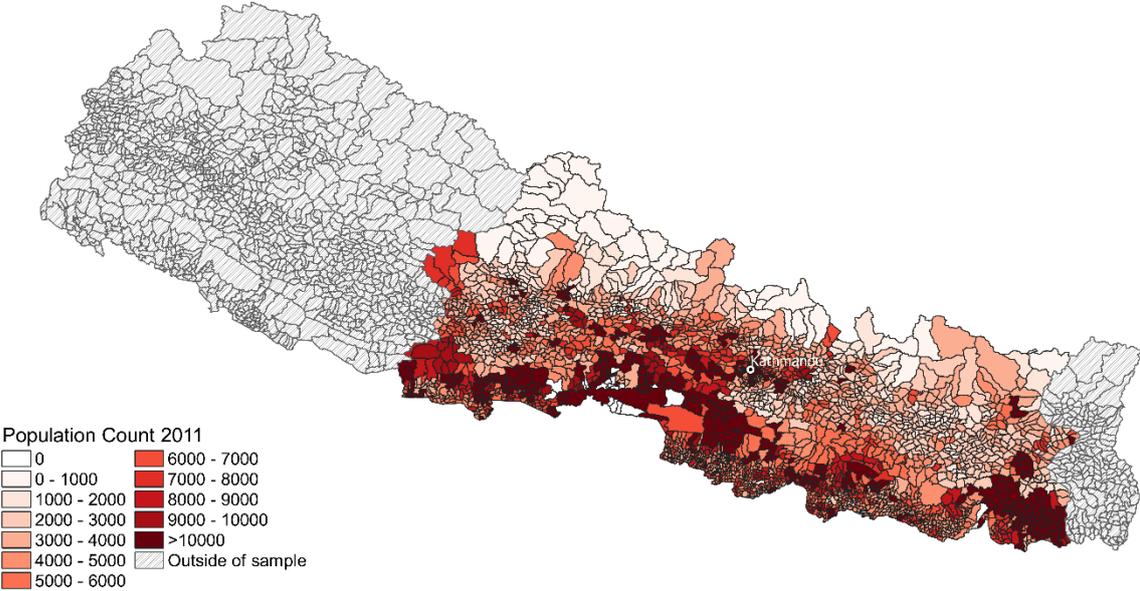
**Appendix 3:** Spatial distribution of nighttime light prior to 2015 Nepal earthquake across Nepalese municipalities



**Appendix 4:** Spatial distribution of households with solid house foundation (cement) across Nepalese municipalities



**Appendix 5:** Spatial distribution of Nepal's population (population count) as of 2011 across Nepalese municipalities



## Appendix 6: Variable list with definitions and sources

	Definition	Data Source
<i>Dependent variables</i>		
No. of proposed projects	Number of proposed disaster aid projects in the municipality	<a href="#">AidData (2016a)</a>
No. of funded projects	Number of funded disaster aid projects in the municipality	<a href="#">AidData (2016a)</a>
Proposed financial amount (US\$) (ln)	Financial value of all proposed disaster aid projects in the municipality (in 1000 US\$)	<a href="#">AidData (2016a)</a>
Funded financial amount (US\$) (ln)	Financial value of all funded disaster aid projects in the municipality (in 1000 US\$)	<a href="#">AidData (2016a)</a>
Share of funding obtained	Ratio of funded to requested financial value of disaster aid projects in the municipality	<a href="#">AidData (2016a)</a>
<i>Disaster impact variables</i>		
Immediate damage	Earthquake destruction index of the first earthquake (April 25, 2015) for the highest quality building type scenario, ranging from 0 (no destruction) to 1 (all building are destroyed)	<a href="#">USGS (2017a)</a>
Aftershock damage	Earthquake destruction index of the major aftershock earthquake (Mai 12, 2015) for the highest quality building type scenario, ranging from 0 (no destruction) to 1 (all building are destroyed)	<a href="#">USGS (2017c)</a>
<i>Socio-economic vulnerabilities</i>		
Population (ln)	Logarithm of the population size of the municipality	<a href="#">Central Bureau of Statistics (2011)</a>
Solid house foundation (%)	Percentage of households with solid house foundation (cement) in the municipality in 2011	<a href="#">Central Bureau of Statistics (2011)</a>
Pre-earthquake nightlight (ln)	Average nighttime light intensity in the municipality between January 2012 to March 2015	<a href="#">NOAA (2017)</a>
Urban location	Binary variable equal to 1 if a VDC was declared as an urban municipality	<a href="#">Central Bureau of Statistics (2014)</a>
<i>Physical vulnerabilities</i>		
Admin 4 area (ln)	Logarithm of the area (km <sup>2</sup> ) of the municipality	<a href="#">Central Bureau of Statistics (2011)</a>
Mean rainfall	Mean rainfall over the period 1998-2014 per municipality in mm	<a href="#">Own calculations based on Huffman et al. (2014)</a>
Distance to Kathmandu (ln)	Logged distance from the municipality centroid to Kathmandu in kilometer	<a href="#">Own calculations</a>
Distance to airport (ln)	Logged distance from the municipality centroid to the closest airport in kilometer	<a href="#">Own calculations</a>
1988 earthquake	Binary variable equal to 1 if the municipality was affected by the 1988 earthquake (i.e., had a PGA larger than zero)	<a href="#">USGS (1988)</a>

**Appendix 6 (continued):** Variable list with definitions and sources

	<b>Definition</b>	<b>Data Source</b>
<i>Ethnic, religious and political distortions</i>		
Hindu (%)	Percentage of Hindus within the respective district (administrative level 3)	<a href="#">Central Bureau of Statistics (2011)</a>
Privileged castes (%)	Percentage of people belonging to the Brahmin (“brahmanhill” and “brahmantarai”) and Chhetri (“chhetree”) castes in the municipality	<a href="#">Central Bureau of Statistics (2011)</a>
Communist Party of Nepal (%)	Percentage of votes won by the Communist Party of Nepal (unified Marxist-Leninist) at the 2013 election within the respective district (administrative level 3)	<a href="#">Election Commission Nepal (2018)</a>
Nepali Congress Party (%)	Percentage of votes won by the Nepali Congress Party at the 2013 election within the respective district (administrative level 3)	<a href="#">Election Commission Nepal (2018)</a>
<i>Existing aid networks</i>		
General aid probability	Probability to receive general aid over the period 2002-2014	<a href="#">AidData (2016b)</a>

## Appendix 7: Correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) Immediate damage	100%														
(2) Aftershock damage	35%	100%													
(3) Population (ln)	-1%	-6%	100%												
(4) Admin 4 area (ln)	5%	3%	-16%	100%											
(5) Mean rainfall	23%	-2%	10%	7%	100%										
(6) Pre-earthquake nightlight (ln)	-5%	-9%	31%	-48%	-7%	100%									
(7) Solid house foundation (%)	-14%	-14%	22%	-36%	-8%	75%	100%								
(8) Distance to Kathmandu (ln)	-74%	-34%	-7%	14%	-29%	-25%	-6%	100%							
(9) Distance to airport (ln)	0%	-4%	4%	13%	-7%	-15%	-15%	9%	100%						
(10) 1988 earthquake	32%	23%	2%	-6%	-4%	16%	1%	-42%	-12%	100%					
(11) General aid probability	4%	14%	2%	10%	-4%	4%	6%	-7%	4%	11%	100%				
(12) Privileged castes (%)	17%	15%	-6%	3%	36%	-19%	-20%	-14%	-17%	-24%	0%	100%			
(13) Hindu (%)	-32%	-23%	17%	-37%	-9%	34%	36%	23%	11%	-44%	-4%	-2%	100%		
(14) Communist Party of Nepal (%)	-2%	17%	-22%	29%	27%	-48%	-44%	14%	1%	-31%	-9%	41%	-21%	100%	
(15) Nepali Congress Party (%)	14%	-3%	-23%	29%	27%	-45%	-42%	1%	-16%	-35%	-11%	46%	-11%	61%	100%

**Appendix 8: Robustness checks for design stage (based on Table 3)**

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Table 3, col. 2</i>			<i>Table 3, col. 4</i>		
	Baseline	Exclude Kath- mandu	ADM2 FE	Baseline	Exclude Kath- mandu	ADM2 FE
Immediate damage	3.245** [1.266]	2.859** [1.131]	0.173 [0.112]	7.229** [3.081]	6.556* [3.297]	4.710** [1.966]
Aftershock damage	2.494*** [0.598]	2.216*** [0.558]	0.287** [0.136]	3.079 [2.099]	2.945 [2.137]	3.848* [2.152]
Population (ln)	0.030 [0.081]	0.030 [0.077]	0.000 [0.012]	-0.445* [0.238]	-0.431* [0.234]	-0.203 [0.167]
Solid house foundation (%)	-0.045** [0.019]	-0.042** [0.018]	-0.006** [0.003]	-0.018 [0.030]	-0.018 [0.031]	-0.043 [0.026]
Pre-earthquake nightlight (ln)	-0.556 [0.386]	-0.558 [0.397]	-0.070 [0.061]	-0.561 [0.796]	-0.446 [0.874]	0.622 [0.775]
Admin 4 area (ln)	0.651*** [0.216]	0.610*** [0.202]	0.071*** [0.026]	0.604 [0.449]	0.630 [0.451]	0.539 [0.352]
Mean rainfall	0.078 [0.083]	0.076 [0.077]	0.013 [0.010]	0.264* [0.156]	0.270* [0.158]	0.149 [0.163]
Mean rainfall squared	0.000 [0.000]	0.000 [0.000]	0.000 [0.000]	-0.001 [0.001]	-0.001 [0.001]	0.000 [0.001]
Distance to Kathmandu (ln)	-2.432*** [0.522]	-2.270*** [0.524]	-0.420*** [0.105]	-4.282*** [0.811]	-4.760*** [1.008]	-2.230* [1.292]
Distance to airport (ln)	0.077 [0.276]	0.056 [0.249]	0.007 [0.035]	-0.926 [0.815]	-0.994 [0.821]	-0.771 [0.584]
1988 earthquake	1.644* [0.908]	1.477* [0.834]	0.462* [0.269]	0.926 [1.523]	0.832 [1.531]	-2.377* [1.321]
General aid probability	2.008 [1.232]	1.797 [1.107]	0.348* [0.194]	5.810 [4.066]	5.315 [4.205]	1.672 [4.055]
Privileged castes (%)	0.014** [0.006]	0.013** [0.006]	0.002** [0.001]	-0.025 [0.020]	-0.024 [0.019]	-0.017 [0.016]
Hindu (%)	-0.012 [0.020]	-0.009 [0.018]	-0.006** [0.003]	0.012 [0.050]	0.013 [0.051]	-0.072 [0.045]
Communist Party of Nepal (%)	-0.005 [0.043]	-0.004 [0.038]	0.010* [0.006]	0.227** [0.109]	0.232** [0.109]	0.254** [0.103]
Nepali Congress Party (%)	0.106** [0.043]	0.094** [0.039]	0.009 [0.007]	0.198** [0.091]	0.198** [0.092]	0.101 [0.082]
Adjusted R-squared				0.605	0.598	0.716
N of observations	2793	2735	2793	2793	2735	2793
N of clusters	47	46	47	47	46	47

*Notes:* The dependent variable is *no. of proposed projects* in columns 1-3 and *proposed financial amount (ln)* in columns 4-6. Results in columns 1-3 are estimated with NB regression and columns 4-6 with OLS. Columns 1-3 show marginal effects at the mean. Robust standard errors (in brackets) are clustered at the district level (ADM3). \* (\*\*, \*\*\*) indicates statistical significance at the ten-percent (five-percent, one-percent) level.

**Appendix 9:** Robustness checks for funding stage (based on Table 4)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Baseline	Exclude	ADM2	Baseline	Exclude	ADM2	Baseline	Exclude	ADM2
	(Table 4, col. 3)	Kath- mandu	FE	(Table 4, col. 4)	Kath- mandu	FE	(Table 4, col. 5)	Kath- mandu	FE
Immediate damage	-0.914*	-0.949**	-0.082***	0.177	0.196	0.224	-0.066	-0.056	-0.026
	[0.491]	[0.475]	[0.029]	[0.215]	[0.215]	[0.175]	[0.066]	[0.064]	[0.047]
Aftershock damage	-0.330	-0.381	-0.074**	0.557***	0.563***	0.468**	0.145**	0.151**	0.073
	[0.369]	[0.366]	[0.033]	[0.207]	[0.208]	[0.218]	[0.065]	[0.066]	[0.059]
Population (ln)	-0.005	-0.003	-0.002	0.017*	0.017*	0.010	0.005	0.005	0.002
	[0.042]	[0.040]	[0.004]	[0.009]	[0.009]	[0.007]	[0.004]	[0.004]	[0.004]
Solid house foundation (%)	-0.018***	-0.015**	-0.001**	-0.002	-0.002	-0.001	-0.001	-0.001	0.000
	[0.007]	[0.007]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Pre-earthquake nightlight (ln)	-0.044	-0.055	0.006	0.010	0.011	-0.003	-0.024	-0.022	-0.016
	[0.134]	[0.142]	[0.012]	[0.047]	[0.050]	[0.044]	[0.016]	[0.019]	[0.016]
Admin 4 area (ln)	0.197***	0.188***	0.008	0.029	0.029	0.023	0.017	0.018	0.010
	[0.073]	[0.068]	[0.005]	[0.020]	[0.020]	[0.019]	[0.011]	[0.011]	[0.009]
Mean rainfall	0.025	0.031	-0.001	0.001	0.001	0.000	-0.001	-0.002	-0.004
	[0.034]	[0.033]	[0.002]	[0.008]	[0.008]	[0.006]	[0.005]	[0.005]	[0.005]
Mean rainfall squared	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Distance to Kathmandu (ln)	-0.664***	-0.700***	-0.072***	-0.221***	-0.205***	-0.273***	-0.134***	-0.121***	-0.139***
	[0.219]	[0.222]	[0.017]	[0.046]	[0.055]	[0.076]	[0.022]	[0.030]	[0.030]
Distance to airport (ln)	-0.081	-0.090	-0.001	0.030	0.031	0.036	0.035*	0.036*	0.044***
	[0.108]	[0.096]	[0.009]	[0.044]	[0.043]	[0.040]	[0.020]	[0.020]	[0.010]
1988 earthquake	1.392**	1.255**	0.115**	-0.026	-0.024	0.017	0.038	0.037	0.033
	[0.588]	[0.538]	[0.052]	[0.077]	[0.077]	[0.101]	[0.058]	[0.059]	[0.046]
General aid probability	1.450	1.250	0.067	0.152	0.172	0.173	0.223**	0.233**	0.157*
	[1.042]	[0.948]	[0.061]	[0.305]	[0.305]	[0.267]	[0.098]	[0.096]	[0.088]

Privileged castes (%)	0.002 [0.002]	0.002 [0.002]	0.000* [0.000]	0.001 [0.001]	0.001 [0.001]	0.001 [0.001]	0.001** [0.000]	0.001** [0.000]	0.000** [0.000]
Hindu (%)	0.004 [0.009]	0.005 [0.008]	-0.001 [0.001]	-0.003 [0.003]	-0.003 [0.003]	-0.002 [0.004]	-0.001 [0.002]	-0.001 [0.002]	-0.002 [0.002]
Communist Party of Nepal (%)	0.031* [0.017]	0.031* [0.017]	0.004*** [0.001]	-0.006 [0.005]	-0.006 [0.005]	-0.007 [0.005]	-0.003 [0.003]	-0.003 [0.003]	-0.003 [0.003]
Nepali Congress Party (%)	0.071*** [0.019]	0.065*** [0.017]	0.007*** [0.002]	0.008 [0.007]	0.008 [0.007]	0.008 [0.008]	0.005 [0.003]	0.005 [0.003]	0.004 [0.005]
No. of proposed projects	0.070*** [0.016]	0.065*** [0.015]	0.007*** [0.001]						
Proposed financial amount (ln)				0.911*** [0.008]	0.911*** [0.008]	0.918*** [0.007]			
Adjusted R-squared				0.999	0.999	0.999	0.668	0.649	0.708
N of observations	2793	2735	2793	2793	2735	2793	1290	1232	1290
N of clusters	47			47	46	47	24	23	24

Notes: The dependent variable is *no. of funded projects* in columns 1-3, *funded financial amount (ln)* in columns 4-6, and *share of funding obtained* in columns 7-9. Results in columns 1-3 are estimated with NB regression and columns 4-9 with OLS. Columns 1-3 show marginal effects at the mean. Robust standard errors (in brackets) are clustered at the district level (ADM3). \* (\*\*, \*\*\*) indicates statistical significance at the ten-percent (five-percent, one-percent) level.

**Appendix 10: Robustness checks for design stage (sample split with distance to Kathmandu, based on Table 3)**

	(1)	(2)	(3)	(4)	(5)	(6)
	Table 3, col. 2			Table 3, col. 4		
	Baseline	<50km from Kath- mandu	>50km from Kath- mandu	Baseline	<50km from Kath- mandu	>50km from Kath- mandu
Immediate damage	3.245** [1.266]	33.076*** [3.586]	0.795** [0.318]	7.229** [3.081]	0.828 [0.760]	11.748** [5.461]
Aftershock damage	2.494*** [0.598]	23.837*** [5.461]	0.057 [0.309]	3.079 [2.099]	1.234 [0.984]	0.392 [3.695]
Population (ln)	0.030 [0.081]	-2.093** [0.997]	-0.008 [0.028]	-0.445* [0.238]	-0.108 [0.201]	-0.329 [0.243]
Solid house foundation (%)	-0.045** [0.019]	0.096 [0.112]	-0.013** [0.006]	-0.018 [0.030]	-0.028 [0.023]	-0.045 [0.033]
Pre-earthquake nightlight (ln)	-0.556 [0.386]	-6.847** [3.375]	-0.053 [0.151]	-0.561 [0.796]	0.069 [0.477]	0.733 [1.292]
Admin 4 area (ln)	0.651*** [0.216]	-1.662 [1.210]	0.136*** [0.052]	0.604 [0.449]	-0.461 [0.289]	0.562 [0.452]
Mean rainfall	0.078 [0.083]	-0.929 [1.728]	0.045* [0.027]	0.264* [0.156]	-0.415 [0.245]	0.346* [0.173]
Mean rainfall squared	0.000 [0.000]	0.002 [0.006]	-0.000* [0.000]	-0.001 [0.001]	0.001 [0.001]	-0.001* [0.001]
Distance to Kathmandu (ln)	-2.432*** [0.522]	-16.168** [6.735]	-1.673*** [0.548]	-4.282*** [0.811]	-2.212 [1.357]	-7.407* [3.853]
Distance to airport (ln)	0.077 [0.276]	6.438* [3.753]	-0.017 [0.081]	-0.926 [0.815]	0.926 [0.795]	-1.230 [0.940]
1988 earthquake	1.644* [0.908]		-0.174 [0.229]	0.926 [1.523]		-1.125 [1.748]
General aid probability	2.008 [1.232]	19.358* [10.533]	-0.084 [0.384]	5.810 [4.066]	2.329 [1.799]	2.922 [6.251]
Privileged castes (%)	0.014** [0.006]	-0.035 [0.043]	0.004** [0.002]	-0.025 [0.020]	-0.005 [0.004]	-0.017 [0.019]
Hindu (%)	-0.012 [0.020]	0.133 [0.113]	-0.012 [0.009]	0.012 [0.050]	-0.036 [0.026]	-0.035 [0.061]
Communist Party of Nepal (%)	-0.005 [0.043]	0.272 [0.405]	0.004 [0.013]	0.227** [0.109]	0.127 [0.074]	0.242 [0.146]
Nepali Congress Party (%)	0.106** [0.043]	-0.103 [0.436]	0.034** [0.016]	0.198** [0.091]	0.118 [0.073]	0.184 [0.135]
Adjusted R-squared				0.605	0.346	0.550
N of observations	2793	457	2336	2793	457	2336
N of clusters	47	14	41	47	14	41

Notes: The dependent variable is *no. of proposed projects* in columns 1-3 and *proposed financial amount (ln)* in columns 4-6. Results in columns 1-3 are estimated with NB regression and columns 4-6 with OLS. Columns 1-3 show marginal effects at the mean. Robust standard errors (in brackets) are clustered at the district level (ADM3). \* (\*\*, \*\*\*) indicates statistical significance at the ten-percent (five-percent, one-percent) level.

**Appendix 11: Robustness checks for funding stage (sample split with distance to Kathmandu, based on Table 4)**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Baseline	<50km from Kath- mandu	>50km from Kath- mandu	Baseline	<50km from Kath- mandu	>50km from Kath- mandu	Baseline	<50km from Kath- mandu	>50km from Kath- mandu
	(Table 4, col. 3)			(Table 4, col. 4)			(Table 4, col. 5)		
Immediate damage	-0.914*	-1.806*	-0.291	0.177	-0.150***	0.497*	-0.066	-0.066***	-0.046
	[0.491]	[0.946]	[0.227]	[0.215]	[0.032]	[0.255]	[0.066]	[0.015]	[0.077]
Aftershock damage	-0.330	-1.417	-0.364	0.557***	-0.001	0.800***	0.145**	0.002	0.135*
	[0.369]	[1.482]	[0.230]	[0.207]	[0.031]	[0.248]	[0.065]	[0.013]	[0.074]
Population (ln)	-0.005	-0.071	-0.018	0.017*	-0.002	0.016	0.005	-0.002	-0.004
	[0.042]	[0.158]	[0.015]	[0.009]	[0.004]	[0.011]	[0.004]	[0.002]	[0.004]
Solid house foundation (%)	-0.018***	0.017	-0.008	-0.002	0.001*	-0.001	-0.001	0.001**	0.000
	[0.007]	[0.025]	[0.005]	[0.001]	[0.001]	[0.001]	[0.001]	[0.000]	[0.001]
Pre-earthquake nightlight (ln)	-0.044	-0.163	0.022	0.010	-0.003	0.001	-0.024	-0.005	-0.033
	[0.134]	[0.439]	[0.099]	[0.047]	[0.017]	[0.061]	[0.016]	[0.008]	[0.020]
Admin 4 area (ln)	0.197***	-0.476*	0.048**	0.029	-0.012*	0.006	0.017	-0.007*	0.013
	[0.073]	[0.271]	[0.024]	[0.020]	[0.006]	[0.018]	[0.011]	[0.003]	[0.008]
Mean rainfall	0.025	-0.257	0.029	0.001	0.000	0.006	-0.001	-0.002	0.013**
	[0.034]	[0.215]	[0.019]	[0.008]	[0.008]	[0.007]	[0.005]	[0.003]	[0.005]
Mean rainfall squared	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	-0.000**
	[0.000]	[0.001]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Distance to Kathmandu (ln)	-0.664***	-1.322	-0.758***	-0.221***	-0.062	-0.018	-0.134***	-0.033	-0.310***
	[0.219]	[1.022]	[0.277]	[0.046]	[0.041]	[0.077]	[0.022]	[0.021]	[0.091]
Distance to airport (ln)	-0.081	0.183	-0.050	0.030	0.035	0.027	0.035*	0.016	0.012
	[0.108]	[0.546]	[0.048]	[0.044]	[0.025]	[0.040]	[0.020]	[0.012]	[0.019]
1988 earthquake	1.392**		0.186	-0.026		0.013	0.038		-0.094**
	[0.588]		[0.170]	[0.077]		[0.081]	[0.058]		[0.044]
General aid probability	1.450	-0.093	0.362	0.152	-0.110	0.171	0.223**	-0.042	0.167**
	[1.042]	[1.722]	[0.272]	[0.305]	[0.092]	[0.342]	[0.098]	[0.036]	[0.078]

Privileged castes (%)	0.002 [0.002]	-0.002 [0.004]	0.000 [0.001]	0.001 [0.001]	0.000 [0.000]	0.001 [0.001]	0.001** [0.000]	0.000 [0.000]	0.001* [0.000]
Hindu (%)	0.004 [0.009]	0.044 [0.034]	-0.001 [0.003]	-0.003 [0.003]	0.000 [0.001]	-0.003 [0.003]	-0.001 [0.002]	0.000 [0.001]	-0.002 [0.002]
Communist Party of Nepal (%)	0.031* [0.017]	0.212** [0.084]	0.011 [0.007]	-0.006 [0.005]	0.001 [0.003]	-0.013** [0.006]	-0.003 [0.003]	0.001 [0.001]	-0.007*** [0.002]
Nepali Congress Party (%)	0.071*** [0.019]	0.237** [0.094]	0.037*** [0.010]	0.008 [0.007]	0.001 [0.003]	0.015 [0.009]	0.005 [0.003]	0.000 [0.001]	0.011** [0.004]
No. of proposed projects	0.070*** [0.016]	0.514*** [0.035]	0.027*** [0.007]						
Proposed financial amount (ln)				0.911*** [0.008]	0.953*** [0.005]	0.910*** [0.008]			
Adjusted R-squared				0.999	0.999	0.999	0.668	0.593	0.749
N of observations	2793	457	2336	2793	457	2336	1290	451	839
N of clusters	47	14	41	47	14	41	24	12	18

Notes: The dependent variable is *no. of funded projects* in columns 1-3, *funded financial amount (ln)* in columns 4-6, and *share of funding obtained* in columns 7-9. Results in columns 1-3 are estimated with NB regression and columns 4-9 with OLS. Columns 1-3 show marginal effects at the mean. Robust standard errors (in brackets) are clustered at the district level (ADM3). \* (\*\*, \*\*\*) indicates statistical significance at the ten-percent (five-percent, one-percent) level.

**Appendix 12: Robustness checks for design stage (urban vs non-urban, based on Table 3)**

	(1)	(2)	(3)	(4)	(5)	(6)
	Table 3, col. 2			Table 3, col. 4		
	Baseline	Urban	Non-urban	Baseline	Urban	Non-urban
Immediate damage	3.245** [1.266]	1.030** [0.418]	3.206** [1.252]	7.229** [3.081]	13.599*** [3.720]	7.064** [3.058]
Aftershock damage	2.494*** [0.598]	-0.042 [0.212]	2.552*** [0.606]	3.079 [2.099]	-4.297 [3.750]	3.146 [2.083]
Population (ln)	0.030 [0.081]	0.105 [0.078]	0.034 [0.084]	-0.445* [0.238]	-0.454 [0.725]	-0.436* [0.248]
Solid house foundation (%)	-0.045** [0.019]	0.002 [0.007]	-0.045** [0.019]	-0.018 [0.030]	-0.065 [0.061]	-0.016 [0.030]
Pre-earthquake nightlight (ln)	-0.556 [0.386]	-0.235 [0.212]	-0.629 [0.431]	-0.561 [0.796]	1.992 [1.507]	-0.650 [0.858]
Admin 4 area (ln)	0.651*** [0.216]	-0.069 [0.083]	0.679*** [0.219]	0.604 [0.449]	-0.337 [0.664]	0.659 [0.464]
Mean rainfall	0.078 [0.083]	0.160 [0.139]	0.081 [0.085]	0.264* [0.156]	0.467 [0.838]	0.266* [0.155]
Mean rainfall squared	0.000 [0.000]	0.000 [0.000]	0.000 [0.000]	-0.001 [0.001]	-0.001 [0.003]	-0.001 [0.001]
Distance to Kathmandu (ln)	-2.432*** [0.522]	-0.523** [0.221]	-2.511*** [0.546]	-4.282*** [0.811]	-1.635 [1.116]	-4.337*** [0.828]
Distance to airport (ln)	0.077 [0.276]	-0.067 [0.096]	0.062 [0.284]	-0.926 [0.815]	-0.215 [0.909]	-0.949 [0.824]
1988 earthquake	1.644* [0.908]	-0.344 [0.242]	1.752* [0.930]	0.926 [1.523]	0.808 [1.370]	1.009 [1.559]
General aid probability	2.008 [1.232]	2.682*** [0.882]	1.864 [1.352]	5.810 [4.066]	14.387*** [4.697]	5.427 [4.700]
Privileged castes (%)	0.014** [0.006]	0.001 [0.005]	0.014** [0.006]	-0.025 [0.020]	-0.012 [0.044]	-0.024 [0.020]
Hindu (%)	-0.012 [0.020]	-0.014* [0.008]	-0.010 [0.020]	0.012 [0.050]	0.110** [0.049]	0.013 [0.050]
Communist Party of Nepal (%)	-0.005 [0.043]	0.015 [0.012]	-0.005 [0.044]	0.227** [0.109]	0.446*** [0.093]	0.223** [0.109]
Nepali Congress Party (%)	0.106** [0.043]	0.003 [0.014]	0.107** [0.043]	0.198** [0.091]	0.129 [0.109]	0.197** [0.091]
Adjusted R-squared				0.605	0.745	0.603
N of observations	2793	82	2711	82	2735	2711
N of clusters	47	46	47	47	38	47

*Notes:* The dependent variable is *no. of proposed projects* in columns 1-3 and *proposed financial amount (ln)* in columns 4-6. Results in columns 1-3 are estimated with NB regression and columns 4-6 with OLS. Columns 1-3 show marginal effects at the mean. Robust standard errors (in brackets) are clustered at the district level (ADM3). \* (\*\*, \*\*\*) indicates statistical significance at the ten-percent (five-percent, one-percent) level.

**Appendix 13:** Robustness checks for funding stage (urban vs non-urban, based on Table 4)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Baseline (Table 4, col. 3)	Urban	Non- urban	Baseline (Table 4, col. 4)	Urban	Non- urban	Baseline (Table 4, col. 5)	Urban	Non- urban
Immediate damage	-0.914* [0.491]	0.108 [0.224]	-0.915* [0.497]	0.177 [0.215]	0.349 [0.236]	0.179 [0.213]	-0.066 [0.066]	-0.021 [0.053]	-0.063 [0.065]
Aftershock damage	-0.330 [0.369]	-0.035 [0.205]	-0.321 [0.376]	0.557*** [0.207]	0.514** [0.223]	0.556*** [0.206]	0.145** [0.065]	0.195*** [0.059]	0.147** [0.065]
Population (ln)	-0.005 [0.042]	-0.022 [0.040]	-0.002 [0.042]	0.017* [0.009]	0.029 [0.029]	0.017* [0.009]	0.005 [0.004]	0.011 [0.017]	0.005 [0.004]
Solid house foundation (%)	-0.018*** [0.007]	-0.011** [0.005]	-0.017** [0.007]	-0.002 [0.001]	0.000 [0.001]	-0.002 [0.001]	-0.001 [0.001]	0.001 [0.001]	-0.001 [0.001]
Pre-earthquake nightlight (ln)	-0.044 [0.134]	0.119 [0.133]	-0.053 [0.146]	0.010 [0.047]	0.035 [0.058]	0.015 [0.047]	-0.024 [0.016]	-0.037 [0.022]	-0.018 [0.017]
Admin 4 area (ln)	0.197*** [0.073]	-0.011 [0.079]	0.214*** [0.075]	0.029 [0.020]	0.011 [0.034]	0.033 [0.020]	0.017 [0.011]	0.010 [0.021]	0.019 [0.011]
Mean rainfall	0.025 [0.034]	0.199 [0.153]	0.026 [0.035]	0.001 [0.008]	0.004 [0.034]	0.001 [0.008]	-0.001 [0.005]	0.170*** [0.050]	-0.001 [0.005]
Mean rainfall squared	0.000 [0.000]	-0.001 [0.000]	0.000 [0.000]	0.000 [0.000]	0.000 [0.000]	0.000 [0.000]	0.000 [0.000]	-0.001*** [0.000]	0.000 [0.000]
Distance to Kathmandu (ln)	-0.664*** [0.219]	-0.053 [0.109]	-0.671*** [0.230]	-0.221*** [0.046]	-0.151** [0.060]	-0.222*** [0.046]	-0.134*** [0.022]	-0.098*** [0.023]	-0.132*** [0.022]
Distance to airport (ln)	-0.081 [0.108]	-0.029 [0.090]	-0.084 [0.111]	0.030 [0.044]	0.033 [0.039]	0.029 [0.045]	0.035* [0.020]	0.024* [0.013]	0.035* [0.020]
1988 earthquake	1.392** [0.588]	0.085 [0.253]	1.445** [0.604]	-0.026 [0.077]	-0.110 [0.066]	-0.022 [0.077]	0.038 [0.058]	-0.090* [0.043]	0.040 [0.058]
General aid probability	1.450 [1.042]	1.193** [0.506]	1.576 [1.180]	0.152 [0.305]	0.067 [0.217]	0.212 [0.337]	0.223** [0.098]	0.187** [0.078]	0.264** [0.103]

Privileged castes (%)	0.002 [0.002]	0.007* [0.003]	0.002 [0.002]	0.001 [0.001]	-0.001 [0.002]	0.001 [0.001]	0.001** [0.000]	0.000 [0.001]	0.001** [0.000]
Hindu (%)	0.004 [0.009]	0.001 [0.005]	0.004 [0.009]	-0.003 [0.003]	-0.006** [0.003]	-0.003 [0.003]	-0.001 [0.002]	-0.004*** [0.001]	-0.001 [0.002]
Communist Party of Nepal (%)	0.031* [0.017]	0.012*** [0.005]	0.032* [0.017]	-0.006 [0.005]	-0.003 [0.007]	-0.006 [0.005]	-0.003 [0.003]	0.000 [0.002]	-0.003 [0.003]
Nepali Congress Party (%)	0.071*** [0.019]	0.009 [0.008]	0.072*** [0.019]	0.008 [0.007]	0.001 [0.005]	0.008 [0.007]	0.005 [0.003]	-0.004*** [0.001]	0.005 [0.003]
No. of proposed projects	0.070*** [0.016]	0.024*** [0.007]	0.071*** [0.016]						
Proposed financial amount (ln)				0.911*** [0.008]	0.908*** [0.009]	0.911*** [0.008]			
Adjusted R-squared				0.999	0.999	0.999	0.668	0.918	0.669
N of observations	2793	82	2711	2793	82	2711	1290	30	1260
N of clusters				47	38	47	24	19	24

Notes: The dependent variable is *no. of funded projects* in columns 1-3, *funded financial amount (ln)* in columns 4-6, and *share of funding obtained* in columns 7-9. Results in columns 1-3 are estimated with NB regression and columns 4-9 with OLS. Columns 1-3 show marginal effects at the mean. Robust standard errors (in brackets) are clustered at the district level (ADM3). \* (\*\*, \*\*\*) indicates statistical significance at the ten-percent (five-percent, one-percent) level.

**Appendix 14: Robustness checks for design stage (ADM2 cluster, based on Table 3)**

	(1)	(2)	(3)	(4)
	<i>Table 3, col. 2</i>		<i>Table 3, col. 4</i>	
	Baseline	ADM2 cluster	Baseline	ADM2 cluster
Immediate damage	3.245** [1.266]	3.245** [1.501]	7.229** [3.081]	7.229* [3.650]
Aftershock damage	2.494*** [0.598]	2.494*** [0.688]	3.079 [2.099]	3.079 [2.118]
Population (ln)	0.030 [0.081]	0.030 [0.077]	-0.445* [0.238]	-0.445 [0.284]
Solid house foundation (%)	-0.045** [0.019]	-0.045*** [0.014]	-0.018 [0.030]	-0.018 [0.018]
Pre-earthquake nightlight (ln)	-0.556 [0.386]	-0.556 [0.440]	-0.561 [0.796]	-0.561 [1.015]
Admin 4 area (ln)	0.651*** [0.216]	0.651*** [0.183]	0.604 [0.449]	0.604 [0.325]
Mean rainfall	0.078 [0.083]	0.078 [0.089]	0.264* [0.156]	0.264* [0.132]
Mean rainfall squared	0.000 [0.000]	0.000 [0.000]	-0.001 [0.001]	-0.001 [0.001]
Distance to Kathmandu (ln)	-2.432*** [0.522]	-2.432*** [0.353]	-4.282*** [0.811]	-4.282*** [0.881]
Distance to airport (ln)	0.077 [0.276]	0.077 [0.155]	-0.926 [0.815]	-0.926 [0.906]
1988 earthquake	1.644* [0.908]	1.644 [1.011]	0.926 [1.523]	0.926 [1.201]
General aid probability	2.008 [1.232]	2.008 [1.356]	5.810 [4.066]	5.810* [3.046]
Privileged castes (%)	0.014** [0.006]	0.014* [0.008]	-0.025 [0.020]	-0.025 [0.021]
Hindu (%)	-0.012 [0.020]	-0.012 [0.026]	0.012 [0.050]	0.012 [0.077]
Communist Party of Nepal (%)	-0.005 [0.043]	-0.005 [0.042]	0.227** [0.109]	0.227** [0.083]
Nepali Congress Party (%)	0.106** [0.043]	0.106*** [0.033]	0.198** [0.091]	0.198** [0.058]
Adjusted R-squared			0.605	0.605
N of observations	2793	2793	2793	2793
N of clusters	47	8	47	8

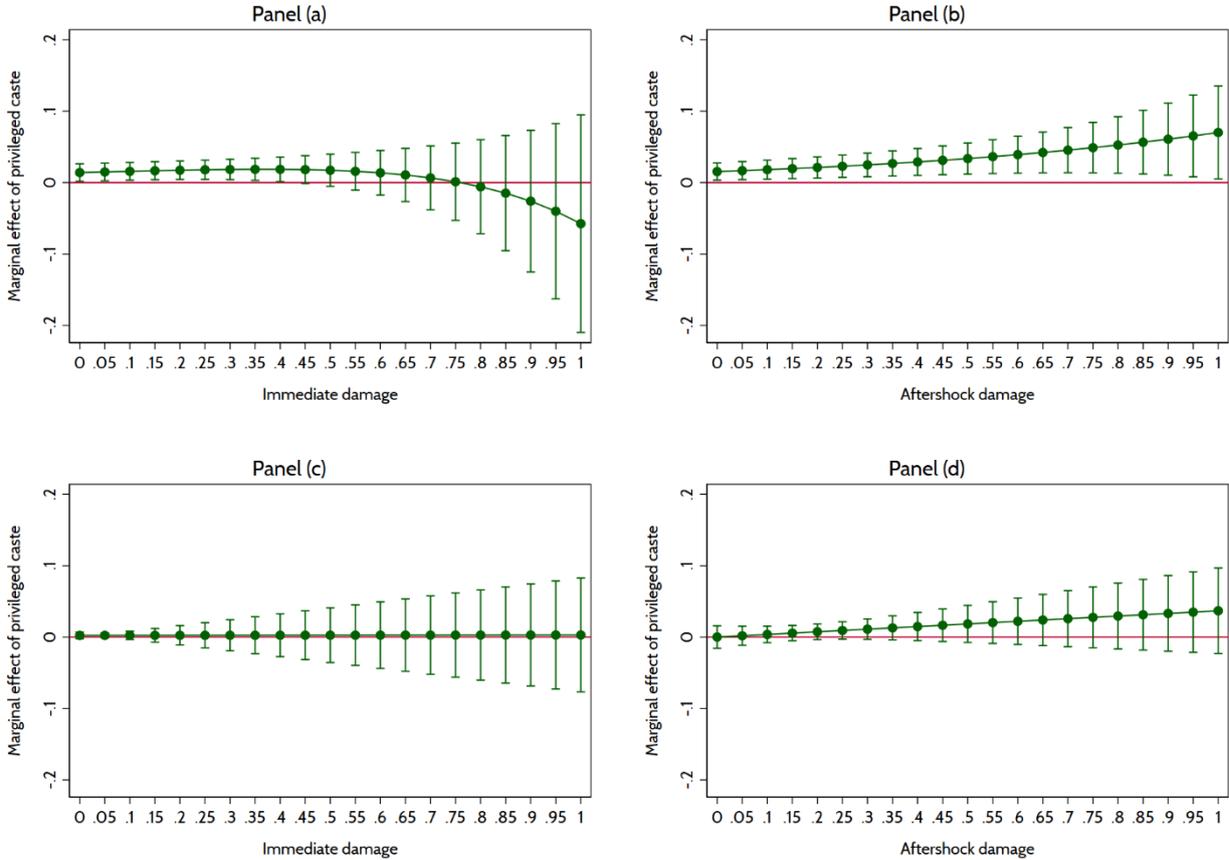
*Notes:* The dependent variable is *no. of proposed projects* in columns 1-2 and *proposed financial amount (ln)* in columns 3-4. Results in columns 1-2 are estimated with NB regression and columns 3-4 with OLS. Columns 1-2 show marginal effects at the mean. Robust standard errors (in brackets) are clustered at the district level (ADM3) in columns 1 and 3 and at the zone level (ADM2) in columns 2 and 4. \* (\*\*, \*\*\*) indicates statistical significance at the ten-percent (five-percent, one-percent) level.

**Appendix 15: Robustness checks for funding stage (ADM2 cluster, based on Table 4)**

	(1)	(2)	(3)	(4)	(5)	(6)
	Baseline	ADM2 cluster	Baseline	ADM2 cluster	Baseline	ADM2 cluster
Immediate damage	-0.914*	-0.914**	0.177	0.177	-0.066	-0.066
	[0.491]	[0.451]	[0.215]	[0.102]	[0.066]	[0.043]
Aftershock damage	-0.330	-0.330	0.557***	0.557**	0.145**	0.145*
	[0.369]	[0.270]	[0.207]	[0.221]	[0.065]	[0.072]
Population (ln)	-0.005	-0.005	0.017*	0.017**	0.005	0.005
	[0.042]	[0.026]	[0.009]	[0.006]	[0.004]	[0.003]
Solid house foundation (%)	-0.018***	-0.018**	-0.002	-0.002	-0.001	-0.001
	[0.007]	[0.007]	[0.001]	[0.001]	[0.001]	[0.001]
Pre-earthquake nightlight (ln)	-0.044	-0.044	0.010	0.010	-0.024	-0.024**
	[0.134]	[0.152]	[0.047]	[0.033]	[0.016]	[0.010]
Admin 4 area (ln)	0.197***	0.197***	0.029	0.029***	0.017	0.017*
	[0.073]	[0.048]	[0.020]	[0.007]	[0.011]	[0.008]
Mean rainfall	0.025	0.025	0.001	0.001	-0.001	-0.001
	[0.034]	[0.040]	[0.008]	[0.006]	[0.005]	[0.005]
Mean rainfall squared	0.000	0.000	0.000	0.000	0.000	0.000
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Distance to Kathmandu (ln)	-0.664***	-0.664***	-0.221***	-0.221***	-0.134***	-0.134***
	[0.219]	[0.183]	[0.046]	[0.043]	[0.022]	[0.020]
Distance to airport (ln)	-0.081	-0.081	0.030	0.030	0.035*	0.035*
	[0.108]	[0.085]	[0.044]	[0.017]	[0.020]	[0.015]
1988 earthquake	1.392**	1.392*	-0.026	-0.026	0.038	0.038
	[0.588]	[0.758]	[0.077]	[0.066]	[0.058]	[0.066]
General aid probability	1.450	1.450**	0.152	0.152	0.223**	0.223**
	[1.042]	[0.739]	[0.305]	[0.110]	[0.098]	[0.079]
Privileged castes (%)	0.002	0.002	0.001	0.001	0.001**	0.001*
	[0.002]	[0.002]	[0.001]	[0.001]	[0.000]	[0.000]
Hindu (%)	0.004	0.004	-0.003	-0.003	-0.001	-0.001
	[0.009]	[0.007]	[0.003]	[0.002]	[0.002]	[0.001]
Communist Party of Nepal (%)	0.031*	0.031***	-0.006	-0.006	-0.003	-0.003
	[0.017]	[0.008]	[0.005]	[0.005]	[0.003]	[0.004]
Nepali Congress Party (%)	0.071***	0.071***	0.008	0.008	0.005	0.005
	[0.019]	[0.012]	[0.007]	[0.009]	[0.003]	[0.005]
No. of proposed projects	0.070***	0.070***				
	[0.016]	[0.017]				
Proposed financial amount (ln)			0.911***	0.911***		
			[0.008]	[0.006]		
Adjusted R-squared			0.999	0.999	0.668	0.668
N of observations	2793	2735	2793	2793	2735	2793
N of clusters	47	46	47	8	24	7

Notes: The dependent variable is *no. of funded projects* in columns 1-2, *funded financial amount (ln)* in columns 3-4, and *share of funding obtained* in columns 5-6. Results in columns 1-2 are estimated with NB regression and columns 3-6 with OLS. Columns 1-2 show marginal effects at the mean. Robust standard errors (in brackets) are clustered at the district level (ADM3). \* (\*\*, \*\*\*) indicates statistical significance at the ten-percent (five-percent, one-percent) level.

**Appendix 16:** Interaction of disaster impact with privileged castes (OLS, ADM2 cluster, based on Table 3, col. 2 for panels (a) and (b) and col. 4 for panels (c) and (d))



*Notes:* Panels (a) and (b) show marginal effects with 90% confidence intervals for extensions of the baseline specification in column 2 of Table 3 and panels (c) and (d) for the baseline specification in column 4 of Table 3. Specifically, we add two interaction terms to the respective baseline specification: (i) between privileged castes and immediate damage in panels (a) and (c) and (ii) between privileged castes and aftershock damage in panels (b) and (d).

## **Additional References**

Bhattacharjee, A. (2016). After-action review of Nepal earthquake response: Final Report.

UNDP. <http://flagship2.nrrc.org.np/sites/default/files/knowledge/AAR%20Nepal%20Earthquake%20Response%20%20-%20UNDP%20Nov2016.pdf>. Accessed 21 March 2020.