

Appendix*Bayesian Model Details*

The statistical analyses were calculated using Markov Chain Monte Carlo Bayesian methods for multinomial regression, using the `brms` package (Bürkner) in R (version 4.1.3). Table A1 reports model details. The default tuning parameter delta is 0.90; I adjusted this in two cases due to system prompting.

To validate and compare the models, I use leave-one-out (LOO) cross-validation (Vehtari, Gelman, et al.; Vehtari, Gabry, et al.; Vehtari, Simpson, et al.). Table A1 includes the resulting expected log predictive densities (ELPDs) and standard errors. Each model had a few bad Pareto k -hat values: 1 (.2%), 2 (.1%), 3 (.1%), and 3 (.5%). The model estimates should still be fine, given their small relative proportion from the overall number of post-warmup iterations (8000). Across the models, there is no difference between models 1 and 2 and no difference between models 3 and 4. To make direct comparisons across all four, they need the same sample size, and so I reestimated models 1 and 2 with the same sample as models 3 and 4. Based on comparing ELPDs, models 1 and 2 are considerably more accurate.

Table A1. Model and Cross-Validation Statistics

Step Size and Divergence				
	(1)	(2)	(3)	(4)
Observations	1242	1242	1240	1240
Step size tuning parameter	0.95	0.9	0.95	0.9
Divergent transitions	3	2	0	0
LOO cross-validation				
	(1)	(2)	(3)	(4)
ELPD	-815.67	-813.01	-793.74	-792.67
ELPD SE	27.69	28.33	27.93	28.67
LOOIC	1631.34	1626.03	1587.48	1585.33

Results

In Tables A2-A5 I present the full results of the paper's main models, summarized as Table 4-6, including relevant diagnostic statistics.

Table A2. Model 1

	Genocide					Expulsion				
	Estimate	89% CI		\hat{R}^2	ESS	Estimate	89% CI		\hat{R}^2	ESS
Pogroms, in spell	1.02	0.75	1.31	1.00	5325.36	1.11	0.73	1.50	1.00	7002.50
Pogroms, previous spell(s)	-1.78	-2.53	-1.18	1.00	1674.61	1.06	0.74	1.44	1.00	3690.43
<i>State capacity</i>										
Potential responsiveness	0.03	-0.31	0.37	1.00	18795.25	0.45	-0.02	0.95	1.00	13765.29
Direct authority	0.63	0.20	1.06	1.00	13588.78	1.66	1.11	2.28	1.00	7061.63
Legal capacity	0.63	0.17	1.09	1.00	15127.16	-0.14	-0.87	0.53	1.00	12928.72
Administrative capacity	0.09	-0.26	0.46	1.00	13501.60	0.16	-0.39	0.70	1.00	16393.49
<i>Religious organization</i>										
Religious governance	0.21	-0.11	0.54	1.00	14594.92	-0.63	-1.25	-0.05	1.00	15285.68
Display: Diocesan seat	0.56	-0.13	1.25	1.00	14223.81	1.52	0.61	2.48	1.00	11667.51
Display: Religious orders	-0.12	-0.24	0.00	1.00	20408.41	0.06	-0.04	0.18	1.00	11696.70
Log spell length	-0.68	-0.83	-0.57	1.00	1821.74	-0.23	-0.40	-0.06	1.00	20889.55
Intercept	0.59	0.25	0.94	1.00	10483.91	-3.24	-4.36	-2.35	1.00	2646.52
Group-level intercept SD (Levels: 809)	0.68	0.09	1.36	1.00	654.72	1.24	0.52	1.88	1.00	1358.69

Table A3. Model 2

	Genocide					Expulsion				
	Estimate	89% CI		\hat{R}^2	ESS	Estimate	89% CI		\hat{R}^2	ESS
Pogroms, in spell	0.74	0.39	1.12	1.00	5074.95	0.75	0.24	1.28	1.00	7475.54
Pogroms, previous spell(s)	-1.94	-2.80	-1.27	1.01	989.86	1.13	0.79	1.53	1.00	3574.46
<i>State capacity</i>										
Potential responsiveness	-0.02	-0.42	0.39	1.00	8630.18	0.34	-0.19	0.89	1.00	9317.29
Responsiveness * Pogroms	0.82	0.05	1.65	1.00	8120.31	1.00	0.05	1.98	1.00	8600.45
Direct authority	0.87	0.38	1.41	1.00	4377.24	1.52	0.85	2.24	1.00	5828.05
Direct * Pogroms	-0.87	-1.91	0.00	1.00	3732.73	0.70	-0.13	1.57	1.00	9515.38
Legal capacity	0.59	0.08	1.11	1.00	9059.17	-0.10	-0.91	0.62	1.00	9437.16
Legal * Pogroms	-0.05	-1.28	1.18	1.00	11168.68	-0.52	-2.15	1.12	1.00	11585.30
Administrative capacity	-0.19	-0.61	0.24	1.00	10525.79	0.25	-0.34	0.84	1.00	9378.93
Administrative * Pogroms	1.48	0.69	2.40	1.00	5018.94	-0.38	-1.81	0.90	1.00	8774.34
<i>Religious organization</i>										
Religious governance	0.16	-0.20	0.53	1.00	10828.11	-0.61	-1.27	0.02	1.00	10930.63
Display: Diocesan seat	0.70	-0.05	1.47	1.00	7320.83	1.56	0.60	2.58	1.00	8479.06
Display: Religious orders	-0.13	-0.28	-0.01	1.00	12101.26	0.07	-0.04	0.19	1.00	8687.23
Log spell length	-0.73	-0.91	-0.60	1.00	980.76	-0.23	-0.40	-0.05	1.00	12740.71
Intercept	0.71	0.36	1.11	1.00	5961.79	-3.49	-4.66	-2.55	1.00	2304.01
Group-level intercept SD (Levels: 809)	1.00	0.20	1.73	1.01	481.08	1.48	0.87	2.15	1.00	1394.31

Table A4. Model 3

	Genocide					Expulsion				
	Estimate	89% CI		\hat{R}^2	ESS	Estimate	89% CI		\hat{R}^2	ESS
Pogroms, in spell	0.96	0.67	1.26	1.00	5067.15	0.98	0.61	1.39	1.00	5800.72
Pogroms, previous spell(s)	-1.96	-2.75	-1.34	1.00	1465.18	0.95	0.64	1.32	1.00	3273.24
Commercial development	0.03	-0.16	0.23	1.00	15176.41	0.08	-0.19	0.35	1.00	12270.11
Jewish community infrastructure	0.68	0.47	0.92	1.00	2567.92	0.80	0.57	1.05	1.00	8259.45
<i>State capacity</i>										
Potential responsiveness	-0.07	-0.45	0.29	1.00	11162.08	0.27	-0.21	0.75	1.00	9975.79
Direct authority	0.49	0.03	0.96	1.00	14130.14	1.42	0.86	2.04	1.00	5734.46
Legal capacity	0.59	0.10	1.08	1.00	11326.99	-0.19	-0.92	0.47	1.00	10130.84
Administrative capacity	0.06	-0.32	0.44	1.00	10729.17	0.15	-0.42	0.69	1.00	11476.99
<i>Religious organization</i>										
Religious governance	0.17	-0.18	0.53	1.00	12036.56	-0.76	-1.40	-0.16	1.00	9944.49
Display: Diocesan seat	0.19	-0.57	0.93	1.00	13110.38	1.06	0.14	2.00	1.00	8518.64
Display: Religious orders	-0.16	-0.30	-0.04	1.00	13949.14	0.01	-0.09	0.12	1.00	9073.60
Log spell length	-0.79	-0.95	-0.65	1.00	1270.49	-0.38	-0.55	-0.20	1.00	12159.92
Intercept	0.70	0.33	1.08	1.00	7584.42	-2.85	-3.93	-2.02	1.00	1729.50
Group-level intercept SD (Levels: 809)	0.94	0.22	1.58	1.01	577.58	1.08	0.35	1.73	1.00	912.03

Table A5. Model 4

	Genocide					Expulsion				
	Estimate	89% CI		\hat{R}^2	ESS	Estimate	89% CI		\hat{R}^2	ESS
Pogroms, in spell	0.70	0.33	1.13	1.00	5230.23	0.59	0.06	1.13	1.00	8103.61
Pogroms, previous spell(s)	-2.18	-3.02	-1.46	1.00	1223.53	0.99	0.66	1.36	1.00	3960.67
Commercial development	0.02	-0.19	0.24	1.00	12181.04	0.12	-0.17	0.39	1.00	12359.85
Jewish community infrastructure	0.74	0.52	1.01	1.00	2655.19	0.82	0.58	1.08	1.00	7859.55
<i>State capacity</i>										
Potential responsiveness	-0.11	-0.57	0.31	1.00	9952.84	0.13	-0.40	0.67	1.00	9678.06
Responsiveness * Pogroms	0.79	-0.04	1.63	1.00	9589.93	1.01	0.05	1.98	1.00	10380.62
Direct authority	0.78	0.25	1.33	1.00	8022.93	1.24	0.56	1.94	1.00	6603.96
Direct * Pogroms	-1.07	-2.16	-0.14	1.00	3679.31	0.62	-0.20	1.50	1.00	10640.31
Legal capacity	0.53	-0.03	1.11	1.00	10614.55	-0.15	-0.98	0.57	1.00	11872.23
Legal * Pogroms	-0.05	-1.35	1.21	1.00	12766.12	-0.39	-1.97	1.18	1.00	13602.00
Administrative capacity	-0.24	-0.70	0.21	1.00	9826.64	0.24	-0.36	0.82	1.00	10973.25
Administrative * Pogroms	1.55	0.68	2.54	1.00	6398.57	-0.40	-1.82	0.90	1.00	10468.85
<i>Religious organization</i>										
Religious governance	0.11	-0.27	0.51	1.00	11975.24	-0.73	-1.40	-0.12	1.00	11563.53
Display: Diocesan seat	0.29	-0.54	1.10	1.00	12309.66	1.04	0.06	2.02	1.00	10782.90
Display: Religious orders	-0.18	-0.33	-0.04	1.00	12396.14	0.01	-0.10	0.13	1.00	9313.97
Log spell length	-0.85	-1.04	-0.69	1.00	1077.06	-0.37	-0.55	-0.19	1.00	14995.18
Intercept	0.83	0.44	1.26	1.00	5338.50	-3.01	-4.14	-2.11	1.00	1947.58
Group-level intercept SD (Levels: 809)	1.23	0.52	1.89	1.00	597.85	1.26	0.56	1.89	1.00	1073.88

References

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