Real-World Developments Predict Immigration News in Right-Wing Media: Evidence from Germany

Christian S. Czymara

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Appendix

Appendix A: Number of topics

There is no objective answer to the question of how many topics the model should identify. I ran models ranging from 10 to 50 topics and plotted semantic coherence and exclusivity against each other. Semantic coherence is maximized when the most probable words in a given topic frequently co-occur together and "correlates well with human judgment of topic quality" (Roberts et al., 2019, p. 11). However, semantic coherence is generally high in cases of a few topics with many very common words. Examining semantic coherence and exclusivity in tandem counters this problem, since high exclusivity means a topic's most probable terms are unlikely to co-occur with the top words of other topics (Roberts et al., 2019, p. 12). Results show that models between 20 and 30 topics tend to maximize both, see Figure A2. A qualitative evaluation suggested that models with fewer than 30 topics lead to an amalgamation of relevant topics, while more than 30 topics did not lead to additional relevant topics. Thus, I chose to estimate 30 topics. I also examined coherence and exclusivity *within* the topics of the final model. Figure A3 suggests that the key topics score relatively well in this respect.

Reference

Roberts, M. E., Stewart, B. M., & Tingley, D. (2019). stm: An R Package for Structural Topic Models. *Journal of Statistical Software*, *91*(2), 1–40. https://doi.org/10.18637/jss.v091.i02

Figure A1: Correlations between predictors

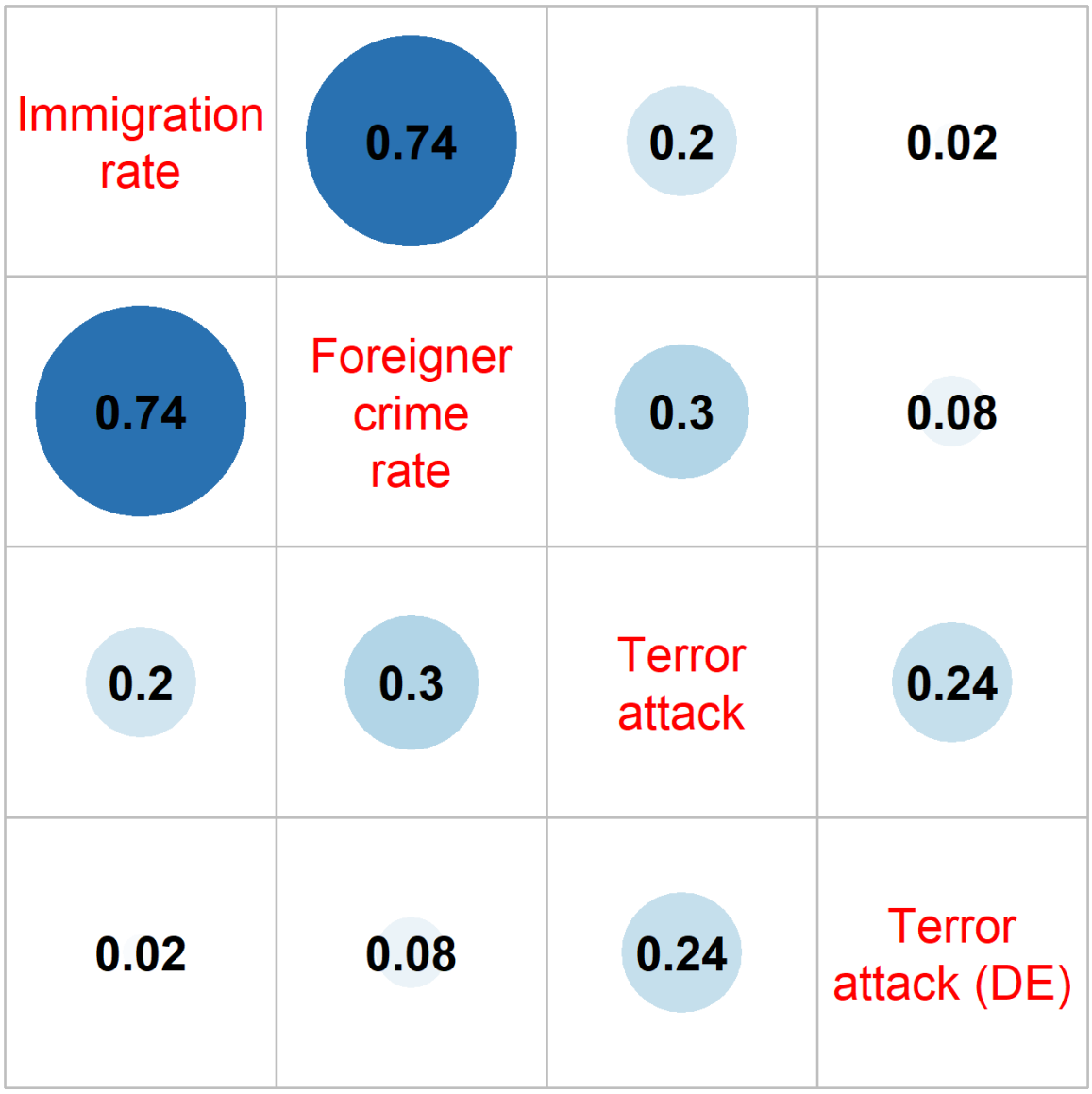

Figure A2: Semantic coherence vs. exclusivity for models with varying number of topics

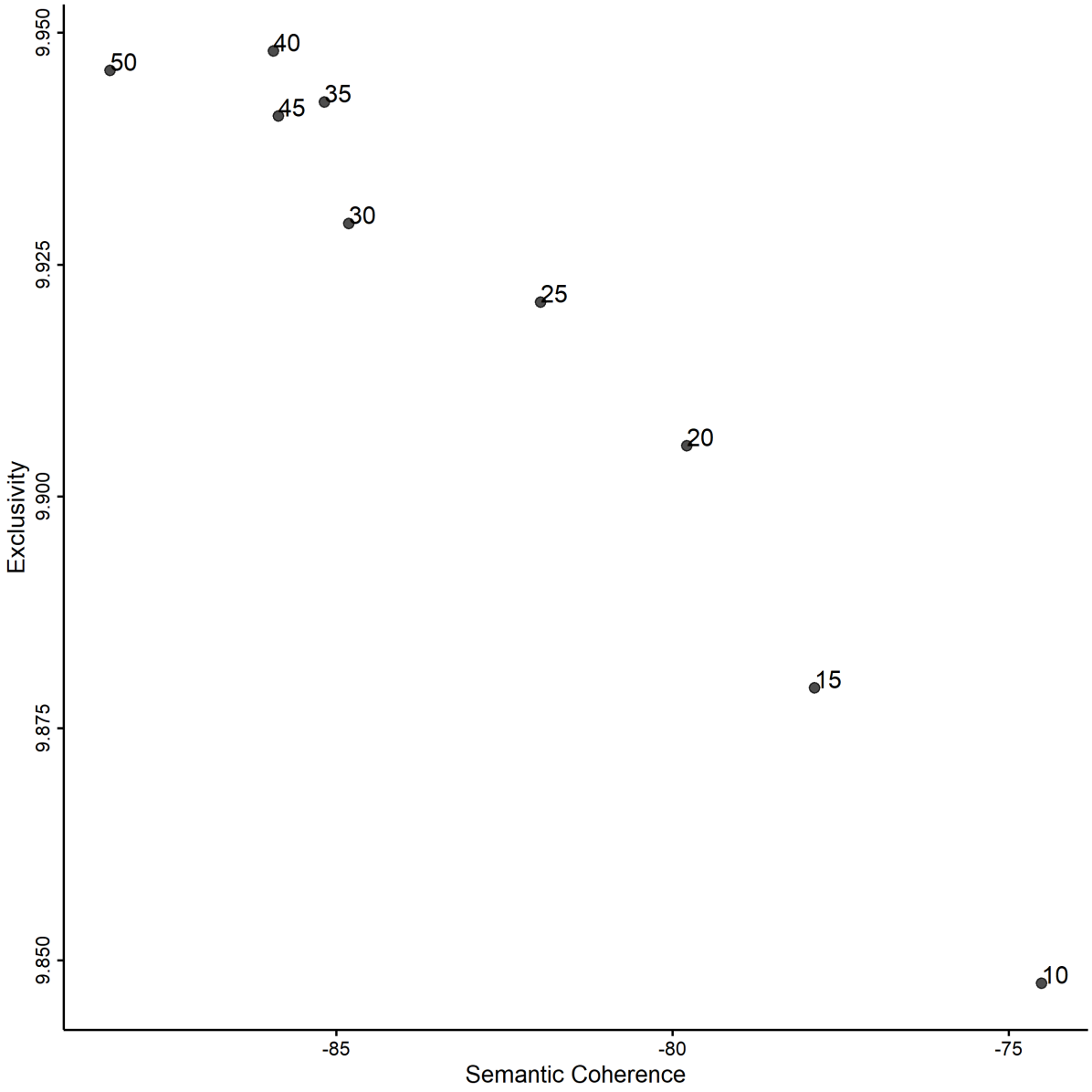

Figure A3: Semantic coherence vs. exclusivity per topic

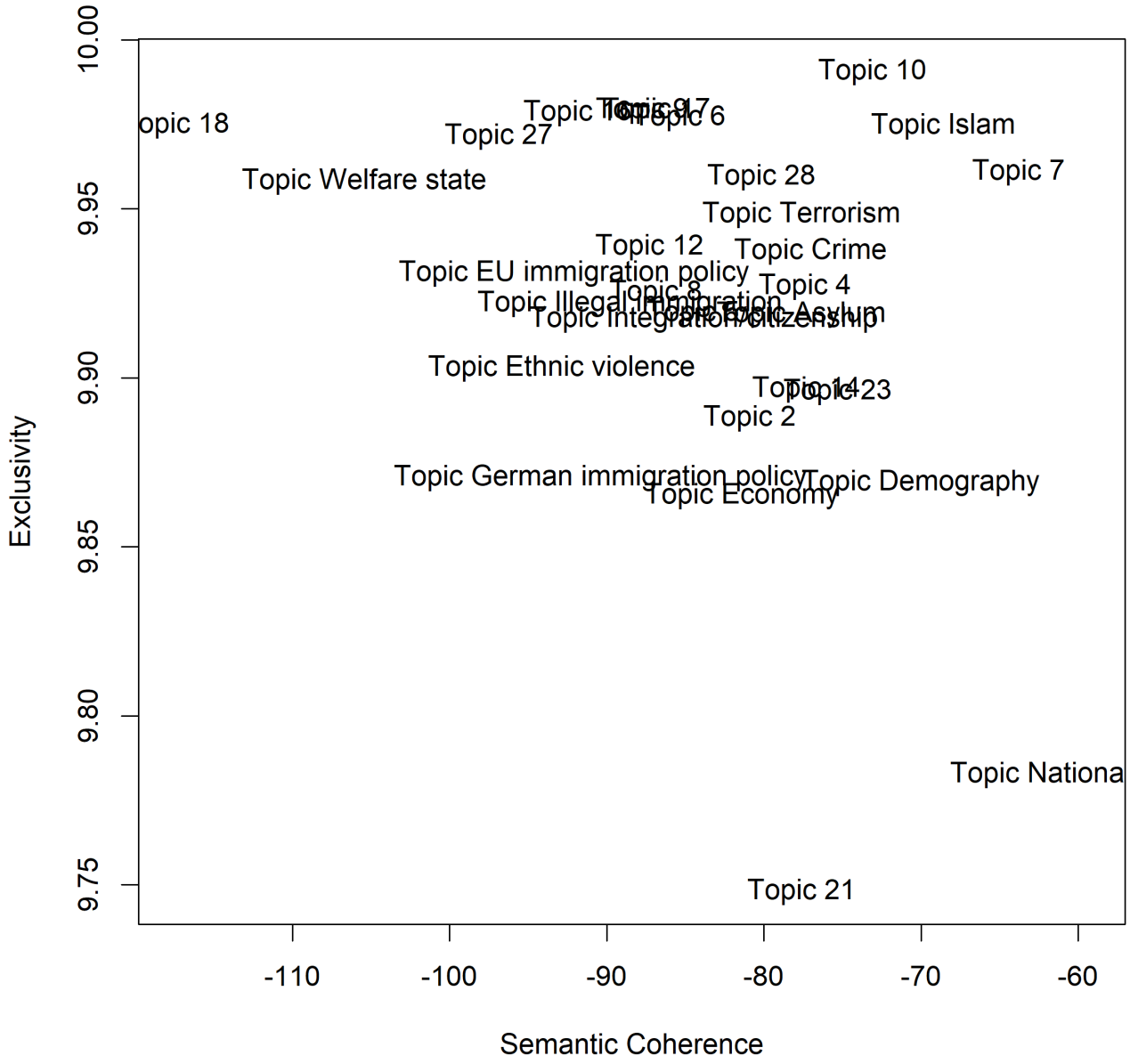

Table A1: Hierarchical linear models predicting immigration news

	Immigration		**Crime**		**terror**		**Terror (DE)**	
Predictors	*Estimates*	*p*	*Estimates*	*p*	*Estimates*	*p*	*Estimates*	*p*
intercept	-13.19 (-14.41 – -11.97)	**<0.001**	-4.97 (-6.42 – -3.52)	**<0.001**	-14.43 (-15.74 – -13.13)	**<0.001**	-15.21 (-16.49 – -13.93)	**<0.001**
Immigration rate	0.13 (0.11 – 0.14)	**<0.001**						
Time trend	0.01 (0.01 – 0.01)	**<0.001**	0.00 (0.00 – 0.00)	**<0.001**	0.01 (0.01 – 0.01)	**<0.001**	0.01 (0.01 – 0.01)	**<0.001**
Foreigner crime rate			0.15 (0.14 – 0.17)	**<0.001**				
terror attack					0.04 (0.03 – 0.06)	**<0.001**		
Terror attack (DE)							0.08 (0.02 – 0.14)	**0.008**
σ^2	0.09		0.09		0.09		0.09	
τ_{00}	0.00 $_{date2}$		0.00 $_{date2}$		0.00 $_{date2}$		0.00 $_{date2}$	
CCI	0.02		0.01		0.02		0.02	
NOT	1053 $_{date2}$		1053 $_{date2}$		1053 $_{date2}$		1053 $_{date2}$	
Observations	53818		53818		53818		53818	

Table A2: Logistic multi-level models predicting immigration news

	Immigration (log)		**Crime (log)**		**Terror (log)**		**Terror (DE) (log)**	
Predictors	*Odds Ratios*	*p*	*Odds Ratios*	*p*	*Odds Ratios*	*p*	*Odds Ratios*	*p*
Intercept	0.00 (0.00 – 0.00)	**<0.001**	0.00 (0.00 – 0.00)	**<0.001**	0.00 (0.00 – 0.00)	**<0.001**	0.00 (0.00 – 0.00)	**<0.001**
Immigration rate	2.62 (2.23 – 3.07)	**<0.001**						
Time trend	1.08 (1.08 – 1.08)	**<0.001**	1.03 (1.03 – 1.03)	**<0.001**	1.09 (1.09 – 1.09)	**<0.001**	1.09 (1.09 – 1.09)	**<0.001**
Foreigner crime rate			3.76 (3.39 – 4.16)	**<0.001**				
Terror attack					1.38 (1.20 – 1.59)	**<0.001**		
Terror attack (DE)							1.83 (1.07 – 3.12)	**0.027**
σ^2	3.29		3.29		3.29		3.29	
τ_{00}	0.15 $_{date2}$		0.09 $_{date2}$		0.19 $_{date2}$		0.19 $_{date2}$	
ICC	0.04		0.03		0.05		0.05	
N	1053 $_{date2}$		1053 $_{date2}$		1053 $_{date2}$		1053 $_{date2}$	
Observations	53818		53818		53818		53818	

Table A3: Hierarchical linear models with random slopes

	Immigration (random slope)		**Crime (random slope)**		**Terror (random slope)**		**Terror (DE) (random slope)**	
Predictors	*Estimates*	*p*	*Estimates*	*p*	*Estimates*	*p*	*Estimates*	*p*
Intercept	-12.23 (-13.38 – -11.07)	**<0.001**	-5.13 (-6.44 – -3.81)	**<0.001**	-14.32 (-15.61 – -13.04)	**<0.001**	-15.23 (-16.51 – -13.95)	**<0.001**
Immigration rate	0.19 (0.16 – 0.21)	**<0.001**						
Time trend	0.01 (0.01 – 0.01)	**<0.001**	0.00 (0.00 – 0.00)	**<0.001**	0.01 (0.01 – 0.01)	**<0.001**	0.01 (0.01 – 0.01)	**<0.001**
Foreigner crime rate			0.13 (0.12 – 0.15)	**<0.001**				
Terror attack					0.04 (0.02 – 0.06)	**<0.001**		
Terror attack (DE)							0.08 (0.04 – 0.12)	**<0.001**
Random Effects								
σ^2	0.09		0.09		0.09		0.09	
τ_{00}	0.00 date2		0.00 date2		0.00 date2		0.00 date2	
τ_{11}	0.02 date2.immigration01		0.01 date2.auslkrimproz01		0.00 date2.week_following_event		0.00 date2.week_following_event_de	
ρ_{01}					0.86 date2		-1.00 date2	
ICC					0.02		0.02	
N	1053 date2		1053 date2		1053 date2		1053 date2	
Observations	53818		53818		53818		53818	

Table A4: Hierarchical linear models without time trend

	Immigration		**Crime**		**Terror**		**Terror (DE)**	
Predictors	*Estimates*	*p*	*Estimates*	*p*	*Estimates*	*p*	*Estimates*	*p*
Intercept	0.06 (0.06 – 0.07)	**<0.001**	0.05 (0.04 – 0.05)	**<0.001**	0.10 (0.09 – 0.10)	**<0.001**	0.10 (0.10 – 0.11)	**<0.001**
Immigration rate	0.17 (0.15 – 0.19)	**<0.001**						
Foreigner crime rate			0.18 (0.17 – 0.19)	**<0.001**				
Terror attack					0.09 (0.07 – 0.11)	**<0.001**		
Terror attack (DE)							0.13 (0.05 – 0.20)	**0.001**
σ^2	0.09		0.09		0.09		0.09	
τ_{00}	0.00 $_{date2}$		0.00 $_{date2}$		0.00 $_{date2}$		0.00 $_{date2}$	
ICC	0.03		0.01		0.04		0.05	
N	1053 $_{date2}$		1053 $_{date2}$		1053 $_{date2}$		1053 $_{date2}$	
Observations	53818		53818		53818		53818	

Table A5: Hierarchical linear models controlling for 2015/16

	Immigration		**Crime**		**Terror**		**Terror (DE)**	
Predictors	*Estimates*	*p*	*Estimates*	*p*	*Estimates*	*p*	*Estimates*	*p*
Intercept	-12.40 (-13.63– -11.16)	**<0.001**	-5.30 (-6.79 – -3.82)	**<0.001**	-11.79 (-13.06– -10.53)	**<0.001**	-12.29 (-13.54– -11.04)	**<0.001**
Immigration rate	0.07 (0.04 – 0.09)	**<0.001**						
Time trend	0.01 (0.01 – 0.01)	**<0.001**	0.00 (0.00 – 0.00)	**<0.001**	0.01 (0.01 – 0.01)	**<0.001**	0.01 (0.01 – 0.01)	**<0.001**
Refugee crisis	0.05 (0.03 – 0.07)	**<0.001**	0.01 (-0.00 – 0.03)	0.058	0.09 (0.08 – 0.10)	**<0.001**	0.09 (0.08 – 0.10)	**<0.001**
Foreigner crime rate			0.14 (0.12 – 0.16)	**<0.001**				
Terror attack					0.03 (0.02 – 0.05)	**<0.001**		
Terror attack (DE)							0.05 (-0.00– 0.11)	0.053
σ^2	0.09		0.09		0.09		0.09	
τ_{00}	0.00 $_{date2}$		0.00 $_{date2}$		0.00 $_{date2}$		0.00 $_{date2}$	
ICC	0.02		0.01		0.02		0.02	
N	1053 $_{date2}$		1053 $_{date2}$		1053 $_{date2}$		1053 $_{date2}$	
Observations	53818		53818		53818		53818	

Table A6: Hierarchical linear models without the years 2015/16

	Immigration (w/o 2015/16)		**Crime (w/o 2015/16)**		**Terror (w/o 2015/16)**		**Terror (DE) (w/o 2015/16)**	
Predictors	*Estimates*	*p*	*Estimates*	*p*	*Estimates*	*p*	*Estimates*	*p*
Intercept	-12.33 (-13.41– -11.25)	**<0.001**	-5.32 (-6.66– -3.98)	**<0.001**	-11.68 (-12.86– -10.51)	**<0.001**	-12.24 (-13.40– -11.09)	**<0.001**
Immigration rate	0.20 (0.17 – 0.23)	**<0.001**						
Time trend	0.01 (0.01 – 0.01)	**<0.001**	0.00 (0.00 – 0.00)	**<0.001**	0.01 (0.01 – 0.01)	**<0.001**	0.01 (0.01 – 0.01)	**<0.001**
Foreigner crime rate			0.14 (0.12 – 0.16)	**<0.001**				
Terror attack					0.04 (0.02 – 0.05)	**<0.001**		
Terror attack (DE)							0.09 (0.02 – 0.16)	**0.015**
σ^2	0.08		0.08		0.08		0.08	
τ_{00}	0.00 $_{date2}$		0.00 $_{date2}$		0.00 $_{date2}$		0.00 $_{date2}$	
ICC	0.01		0.01		0.01		0.01	
N	953 $_{date2}$		953 $_{date2}$		953 $_{date2}$		953 $_{date2}$	
Observations	48097		48097		48097		48097	

Table A7: Full topic model, original German version

Topic	Most probable terms (stemmed)				Name
1	**volk**	**kultur**	**kulturell**	**identitat**	**National identity**
2	recht	demonstration	verein	linksextremist	
3	**einwander**	**einwand**	**asyl**	**illegal**	**German immigration policy**
4	schul	studi	eltern	bildung	
5	zeitung	journalist	bild	les	
6	itali	spani	italien	lega	
7	merkel	csu	angela	kanzlerin	
8	afd	mitglied	fraktion	gauland	
9	turkisch	turkei	turk	erdogan	
10	österreich	fpö	wien	osterreich	
11	**integration**	**einwand**	**staatsburgerschaft**	**zuwander**	**Integration/citizenship**
12	fdp	rot	sachs	hamburg	
13	**islamist**	**anschlag**	**terrorist**	**terror**	**Terrorism**
14	brussel	grundgesetz	parlament	kommission	
15	**asylbewerb**	**abschiebung**	**behord**	**asyl**	**Asylum**
16	schweiz	konservativ	liberal	schwed	
17	frankreich	franzos	grossbritanni	britisch	
18	griechenland	griechisch	pol	bundeswehr	
19	**islam**	**muslim**	**religion**	**moslem**	**Islam**
20	**migration**	**international**	**migrant**	**global**	**EU immigration policy**
21	stadt	haus	famili	strass	
22	**jugend**	**schul**	**gewalt**	**migrationshintergrund**	**Ethnic violence**
23	buch	sarrazin	pegida	leut	
24	**illegal**	**afrikan**	**migrant**	**afrika**	**Illegal immigration**
25	**milliard**	**geld**	**unternehm**	**kost**	**Economy**
26	**bevolker**	**anteil**	**demograph**	**statist**	**Demography**
27	niederland	wild	belgi	belang	
28	usa	us	russland	syri	
29	**polizei**	**tat**	**opfer**	**polizist**	**Crime**
30	**hartz**	**iv**	**arbeitslos**	**leistung**	**Welfare state**