

# A machine language to evaluate the semantics of news coverage

IBC Accelerator 2021

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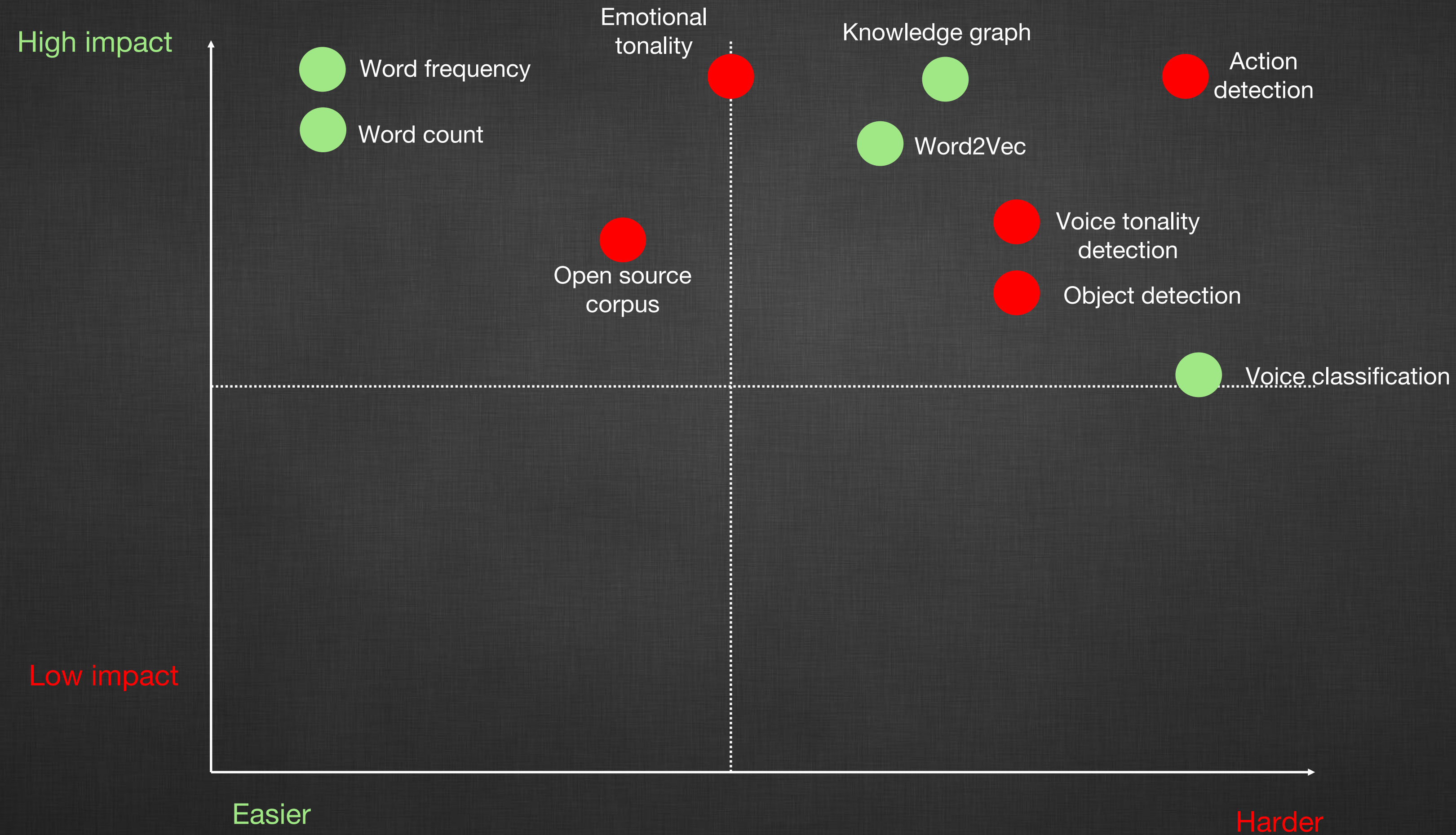
ENTERTAINMENT  
TECHNOLOGY  
CENTER

| etc<sup>SM</sup>





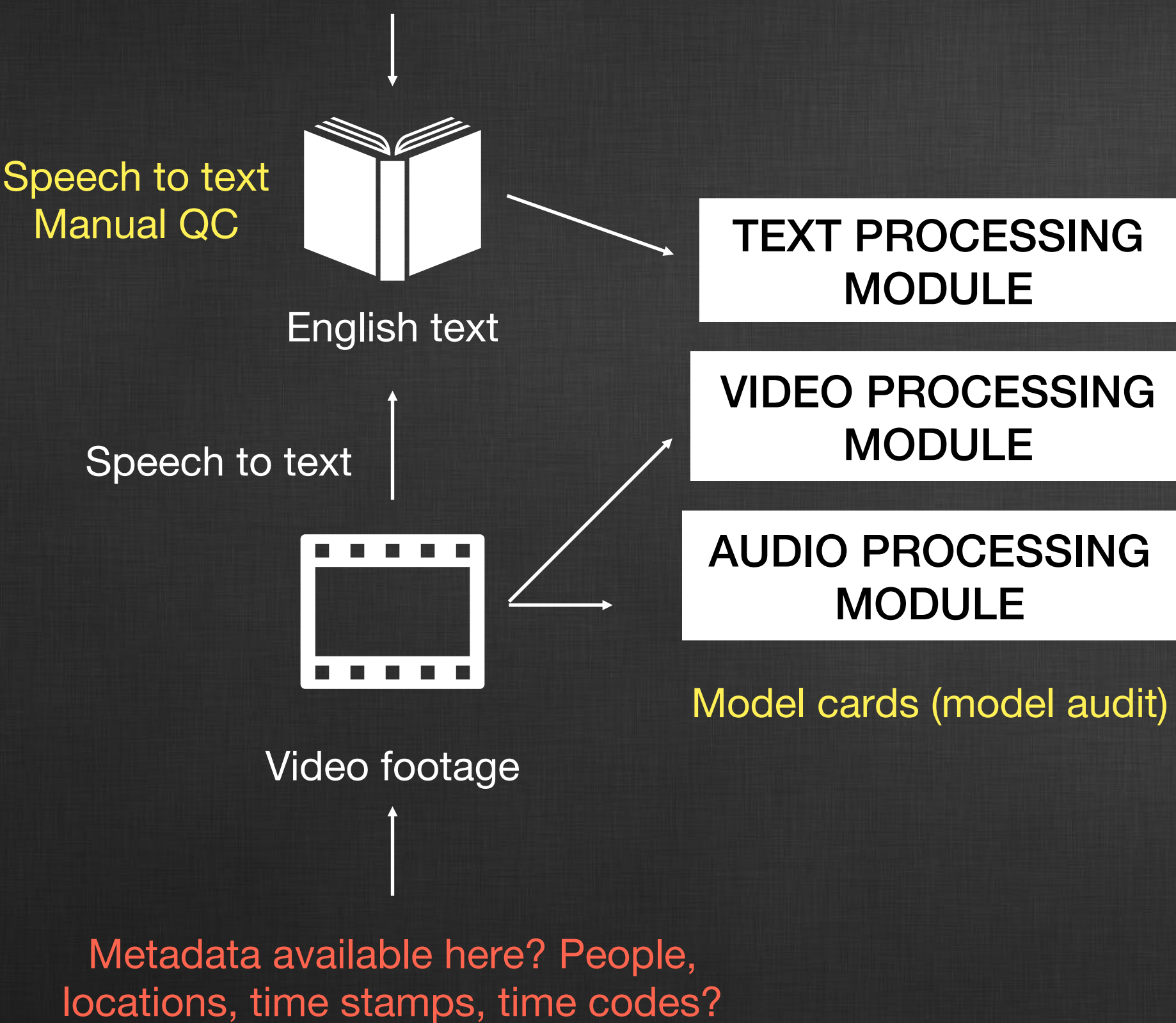
# Feasibility vs. impact matrix





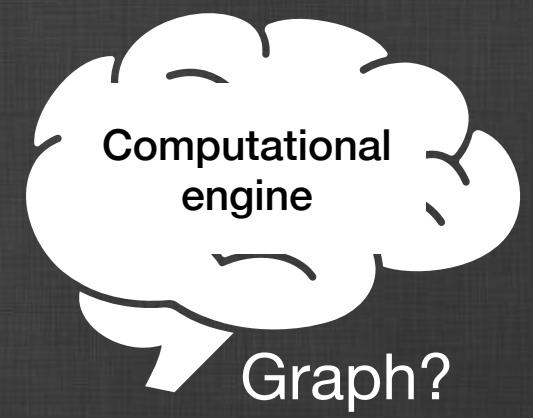
# Pipeline overview and workflow

Metadata available here? People, locations, time stamps

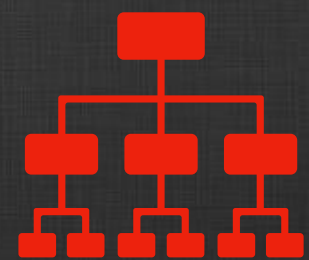


- Topic mapping
- Quote attribution
- Topic & actor analytics
- Text-based tonalities
- Topic polarities
- Voice-based tonalities
- Object recognition
- Color detection
- Action detection

Feature extraction  
Manual QC



KG Manual QC



Knowledge graph

Context: who is what, who/what belongs to what? Entity map

User Interface (Dashboard)

- Length by topic (amount of coverage)
- Length by person, institution, “side” of the debate (amount of coverage)
- Sentiment polarities by topic and sub-topic
- Emotional tonalities from text
- Emotional tonalities from audio
- Emotional tonalities from video

Output audit



Quarterly Reports



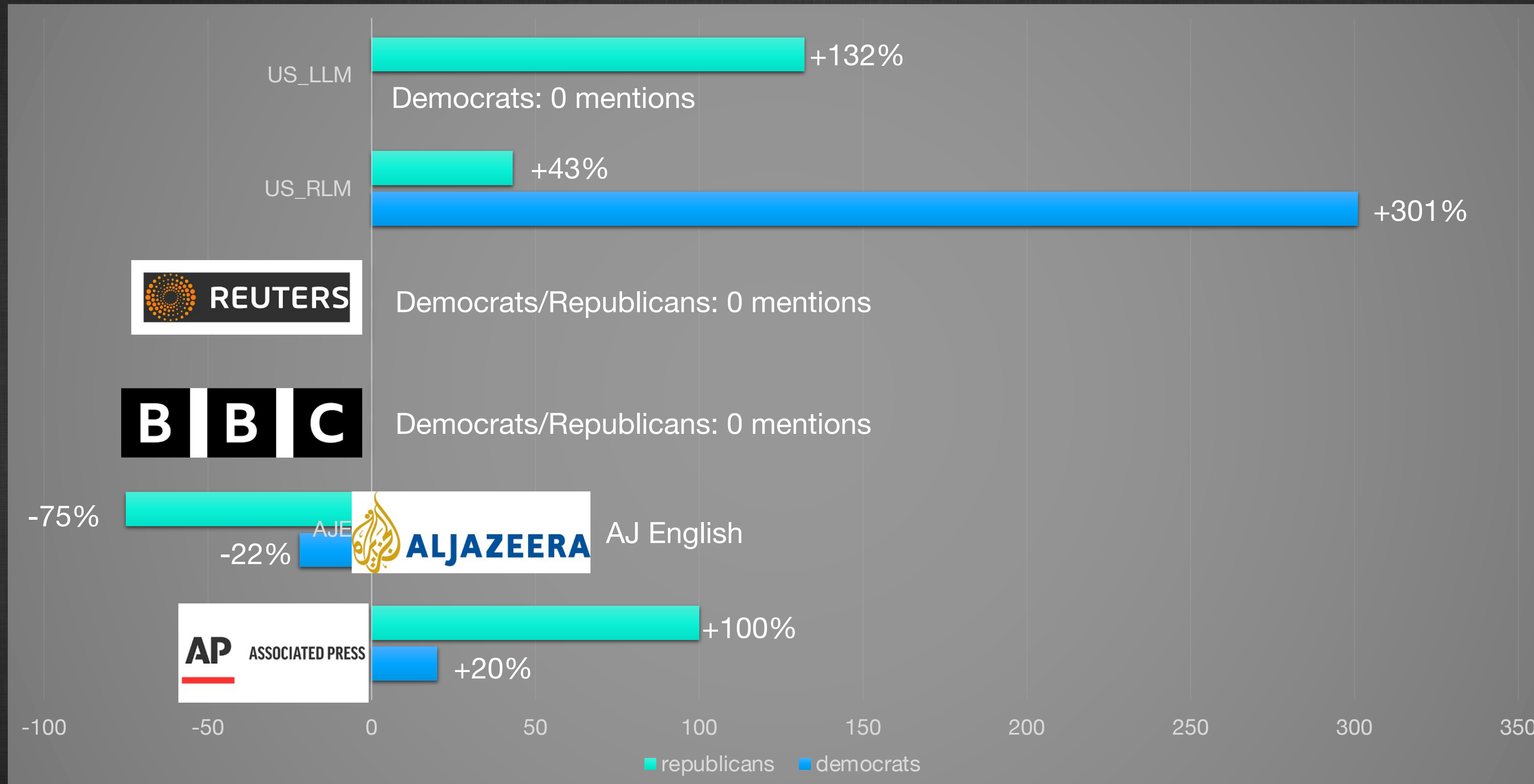
# Frequency of "Loaded" terms



Frequency of the term "regime" in news coverage about the fall of Kabul to the Taliban in the Summer of 2021



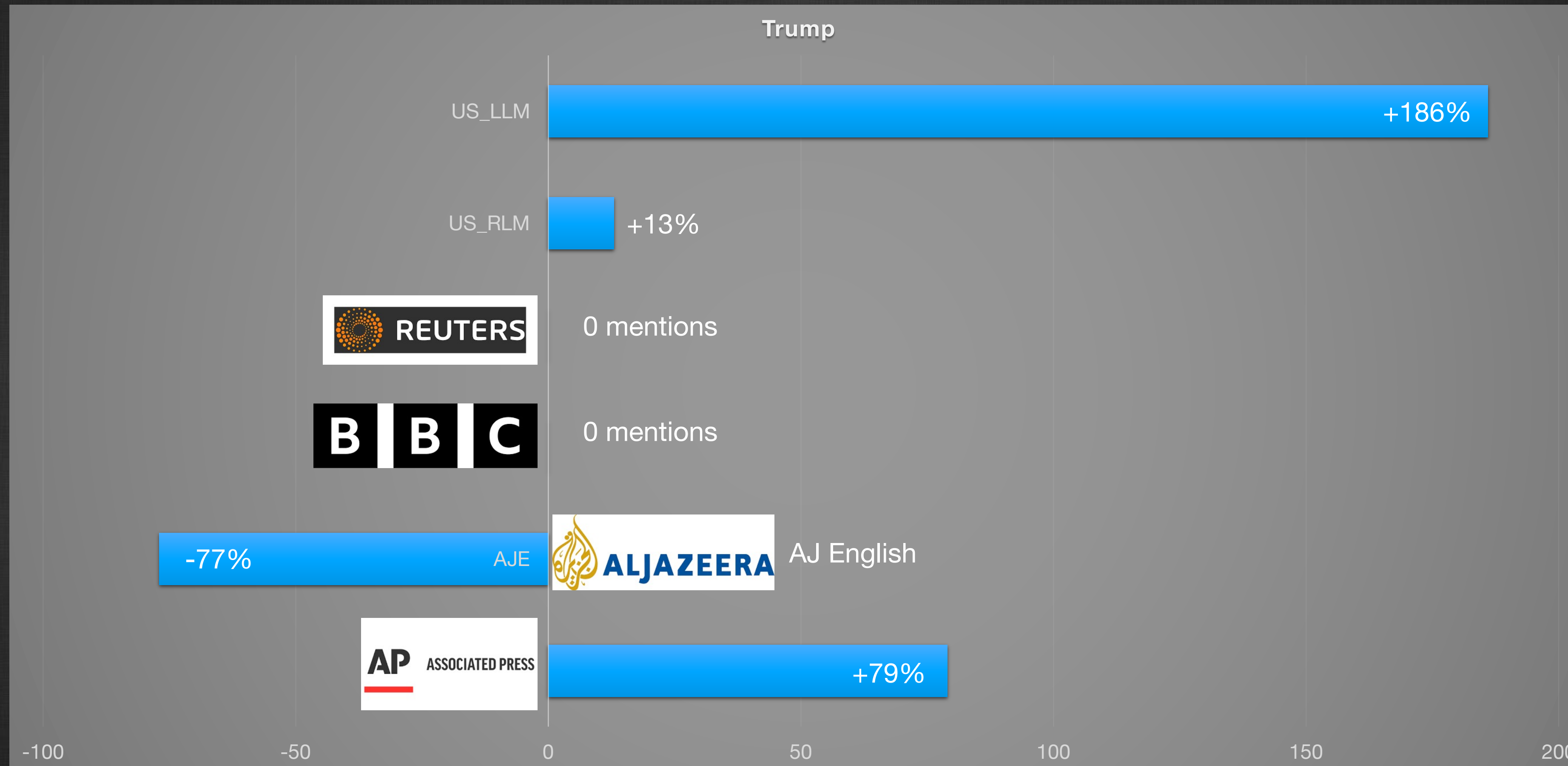
# Frequency of "Loaded" terms



Frequency of the terms "democrats" and "republicans" in news coverage about the fall of Kabul to the Taliban in the Summer of 2021



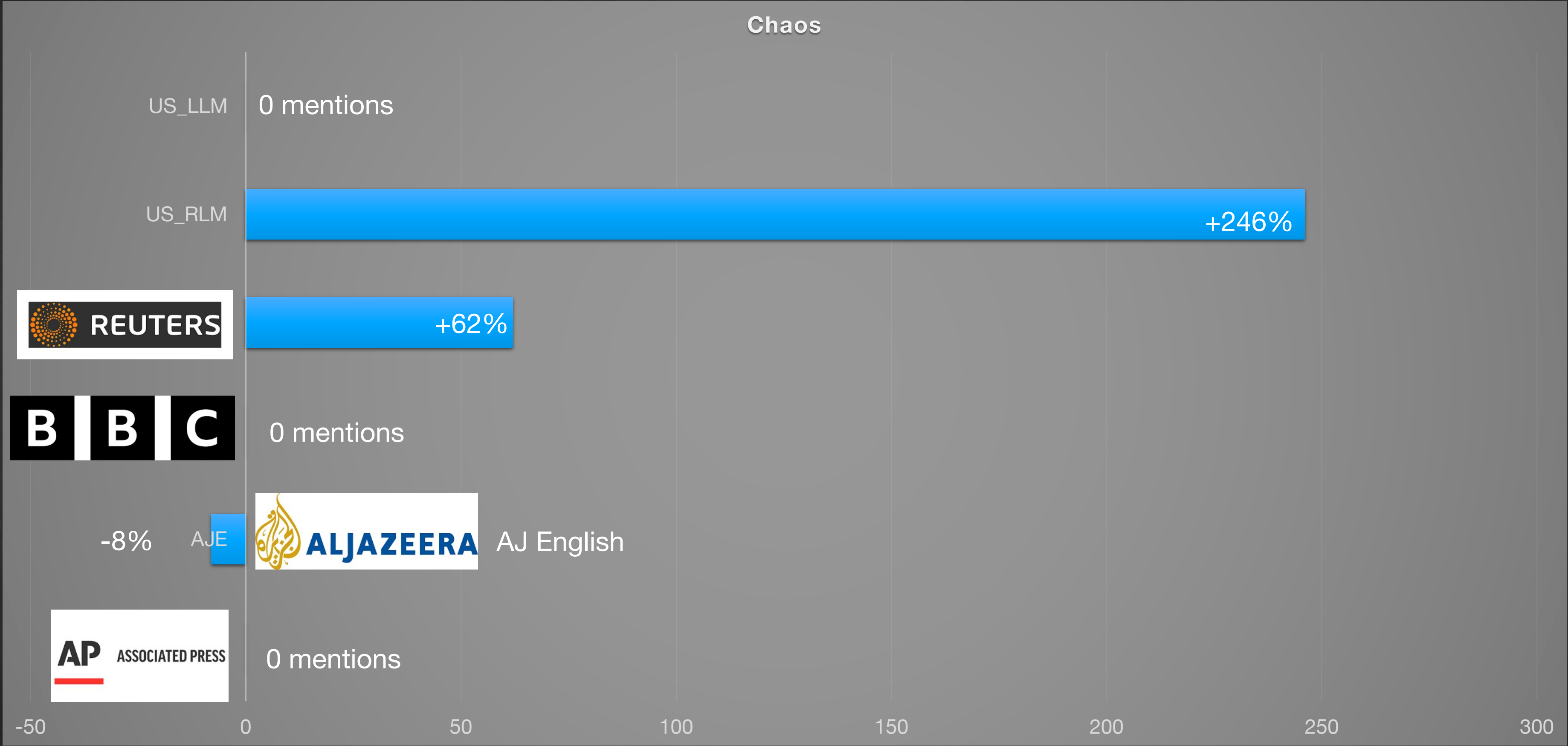
# Frequency of "Loaded" terms



Frequency of the term "Trump" in news coverage about the fall of Kabul to the Taliban in the Summer of 2021



# Frequency of "Loaded" terms



Frequency of the term "chaos" in news coverage about the fall of Kabul to the Taliban in the Summer of 2021



# Emotional Tonalities

Strength of emotional tonalities detected in Black Lives Matter coverage  
(scale of 0 - 100)

News org	openness	thinking_style	happiness	depression	empathetic	dutiful	energetic	type_a	organized	persuasive	ambitious	trusting	neuroticism	independent	insecure	genuine	cheerful	melancholy
Reuters	50.5940637	77.9138615	2.743458	44.0201719	51.9985082	70.4978864	61.0272868	23.8984711	79.6791351	23.2444812	16.9575818	13.2053571	23.0993049	88.8888467	61.0994866	92.66733	26.685136	77.9424171
Fox News	47.8790597	72.5597578	2.5974963	80.3152876	13.2467154	65.6313325	60.2436243	91.4424492	80.3178758	74.0535691	80.6610209	14.2322981	89.0721862	84.6854301	84.3837467	23.662486	29.9145045	53.3003815
Al Jazeera	50.1441615	75.382	3.9695733	76.7123815	87.4807412	68.1755648	55.0295332	31.8118618	63.506695	76.3609158	77.202356	18.5366756	51.7782001	80.9833315	69.9892856	53.870288	25.4658202	93.7015808

News org	cold	stressed	agreeableness	impulsive	self-assured	anxious	aggressive	adventurous	power_driver	liberal	extraversion	conscientious	disciplined	assertive	cooperative	intellectual	generous
Reuters	84.8015684	25.512013	68.173848	15.4974555	84.9583402	68.8363726	16.9444987	34.2962845	14.8883203	56.6769408	22.9774514	83.9304534	95.9606697	13.4043217	61.5649614	81.2093997	22.2724667
Fox News	31.1555607	96.2723686	10.986421	94.793052	83.2248871	70.0384733	93.8096132	30.6608258	11.348253	15.5662761	97.179684	20.6461738	28.4636139	95.6890811	17.6028713	13.5164803	29.2014497
Al Jazeera	55.9107182	95.8816836	29.55186	60.7143916	81.4580789	75.0262953	69.4256818	39.5743072	20.4116879	98.8212589	86.1571375	47.7761879	42.1000361	28.5058367	68.6126836	67.1593329	66.0892251

Terms	Pos_polarity	Neg_polarity
Police	0.74	-0.25
George Floyd	0.13	-0.69
Biden	0.23	-0.75
Trump	0.64	-0.16
Kamala	0.3	-0.69
Criminal Justice Reform	0.33	-0.6
Critical Race Theory	0.05	-0.88
Proud Boys	0.16	-0.41
GOP	0.77	-0.3
Cuba	0.05	-0.91
Flag	0.83	-0.05
Socialist	0.07	-0.69



# Simple corpuses (open source)

Hand-labeled training data

Terms

Positive/Negative/Neutral  
polarity

Semantic context

- Annotated indexes of terms. Labor-intensive but precise.
- Open source and maintained by news community.
- Extremely useful in expressing the deep semantics of news terms, in specific contexts.
- Can immediately “score” bias in news coverage.

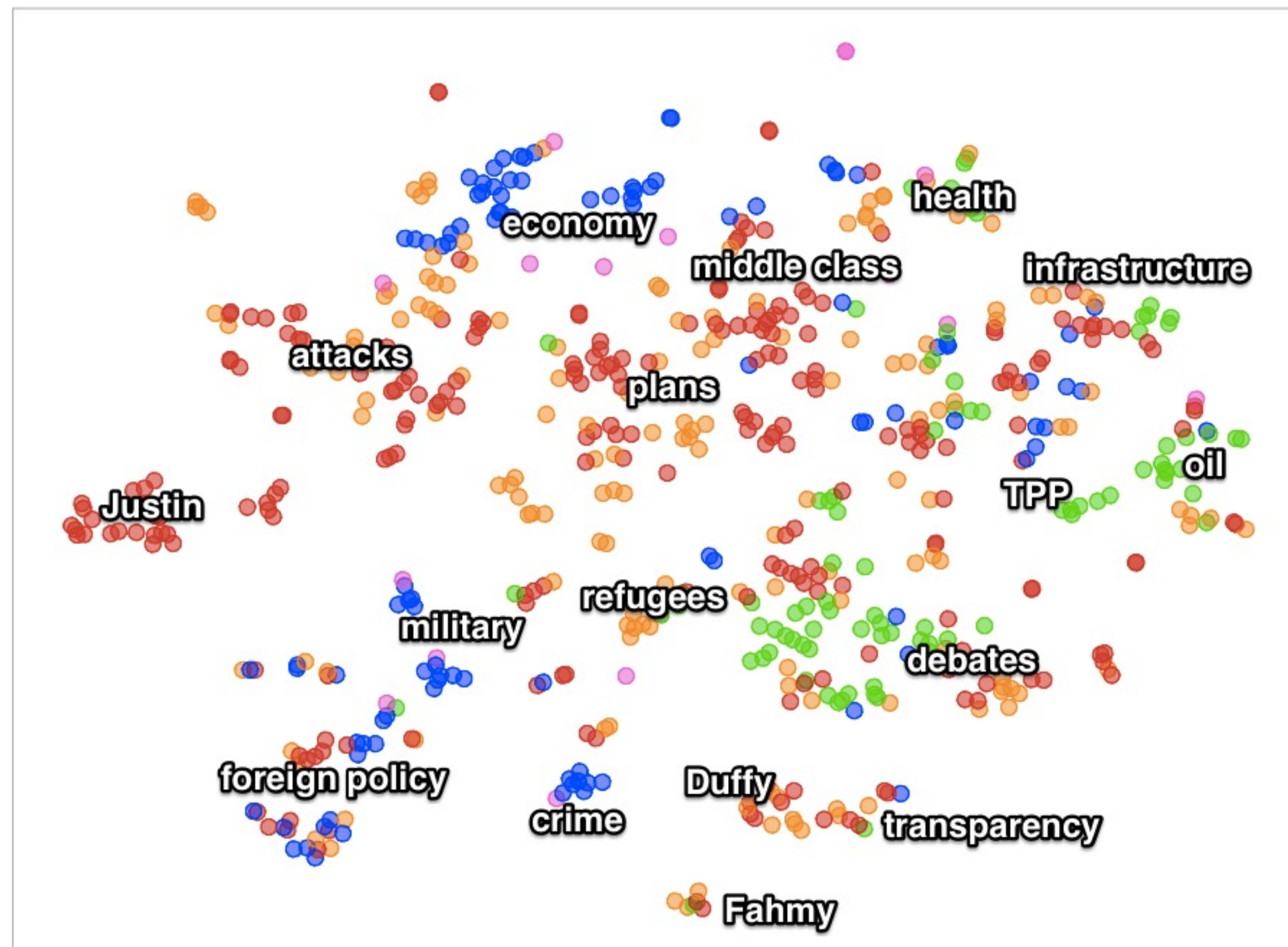
A	B	C	D	E	F
Term	Pos_Score	Neut_Score	Neg_Score	Conveys_1	Conveys_2
regime			1	illegitimacy	political violence
government		1		legitimacy	political stability
council		1		legitimacy	political stability
abuse			1	violent intent	political violence
murder			1	violent intent	political violence
assassination			1	violent intent	political violence
retaliation			1	violent intent	political violence
brutal			1	violent intent	political violence
brutality			1	violent intent	political violence
terror			1	violent intent	political violence
terrorism			1	violent intent	political violence
faction			1	illegitimacy	political instability
execution			1	violent intent	political violence
torture			1	violent intent	political violence
tortured				violent intent	political violence
genocide			1	violent intent	political violence
grisly			1	voyeurism	description of violence
graphic			1	voyeurism	description of violence
wounded		1			description of violence
killed		1			description of violence
executed			1	violent intent	description of violence
brutal murder			1	violent intent	description of violence
murder		1		violent intent	description of violence
murdered		1		violent intent	description of violence
show of force			1	violent intent	political violence
beheading		1		voyeurism	
beheaded		1		voyeurism	
warlord			1	illegitimacy	political violence
politics		1			
politician			1	illegitimacy	
representative		1			
envoy		1			
emissary		1			
slaughter			1		
slaughtered			1		
ideology			1		
program		1			
propaganda			1		
report		1			
reports		1			
news report		1			
news reports		1			
transfer of power		1			
power transfer		1			
takeover			1		
overthrow			1		
overthrowing			1		



# Word vectors



Measuring the semantic distance of language



Cluster words used in news coverage



Measuring distance from “ground truth” news coverage as measure of bias