

Mainstream Media Behavior Analysis on Twitter: A Case Study using UK General Election

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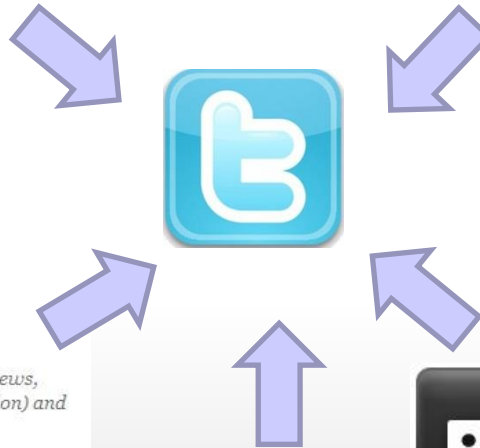
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Mainstream Media on Social Media

- Is mainstream media still dominant in social media?
- How can mainstream media spread their influence to public on social media?



Outline

- Dataset Introduction
- Mainstream media bias evaluation
- Intermediary analysis for mainstream media.
- Information diffusion analysis
- Conclusion



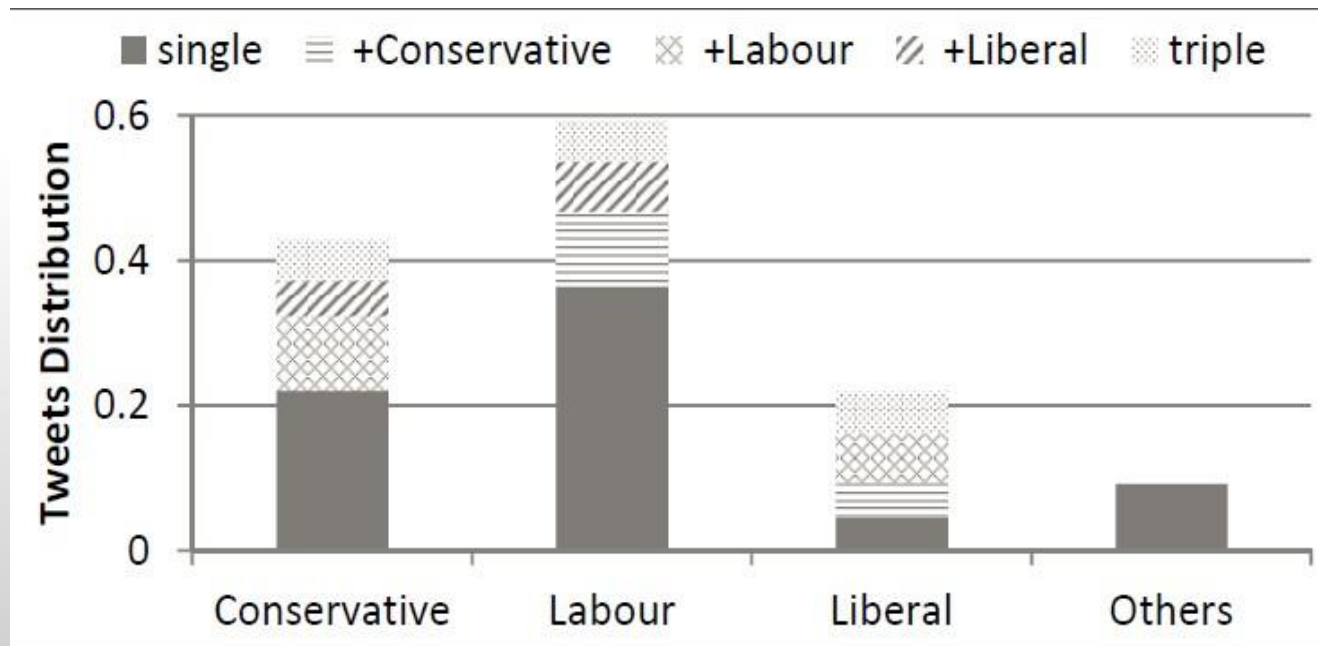
UK Election Dataset

- Political Dataset
 - UK general election
 - 8 weeks from March 10th to May 10th
 - 919,662 unique tweets
 - 68,620 unique users
 - 156,370 retweet
 - 3 parties involved



Tweet Distribution

- Labour (59%)
- Conservative (43%)
- Liberal (22%)



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Tweet statistics

- Labour attracted most attention

TV Media	BBC News	Channel 4 News	ITV News	Sky News
Feeds#	9	2	3	4
Total Tweets#	732	662	112	224
Conservative	286	258	29	114
Labour	498	356	48	175
Liberal	168	154	15	55

Tweets Distribution of Mainstream media relevant to different parties



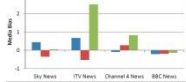
Sentiment based Bias Evaluation

- Open Amplify is used to do sentiment analysis
- Media bias of a media outlet i towards a party j as

$$MediaBias_{ij} = \frac{C_{ij}^{pos}}{C_{ij}^{neg}} - 1 \quad (\text{Equation 3})$$

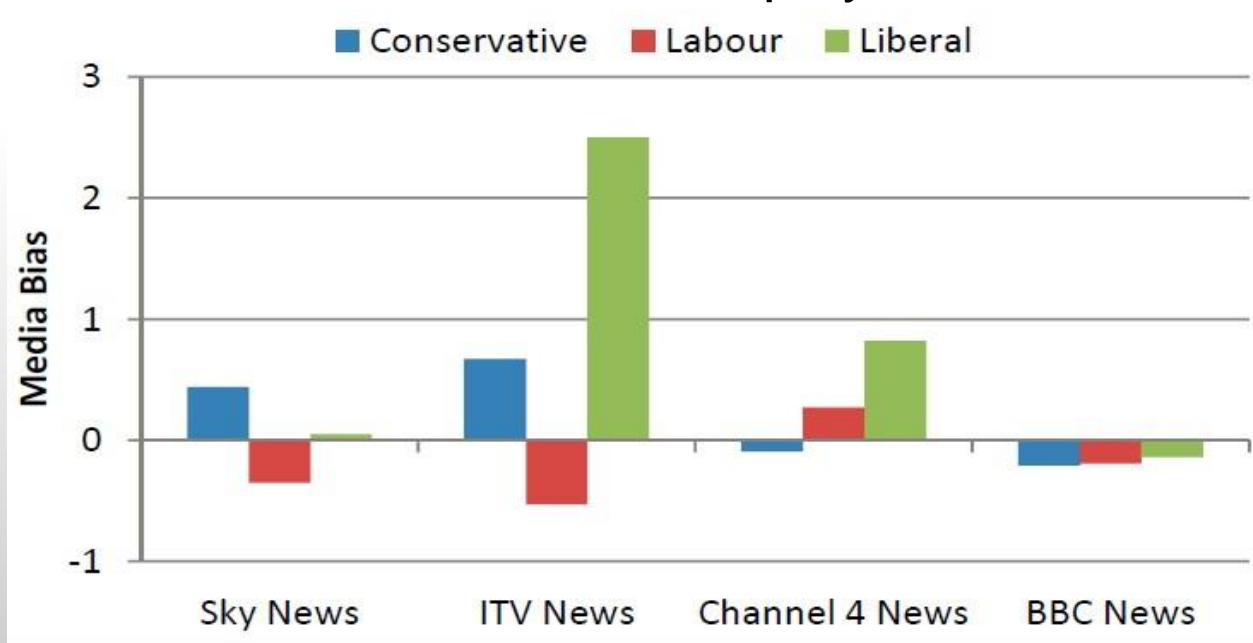
- C_{ij}^{pos} and C_{ij}^{neg} denotes the total number of positive and negative tweets from a media outlet i towards a party j .
- Media Bias takes value 0 if there is no bias. And it is positive for positive bias and negative vice versa.



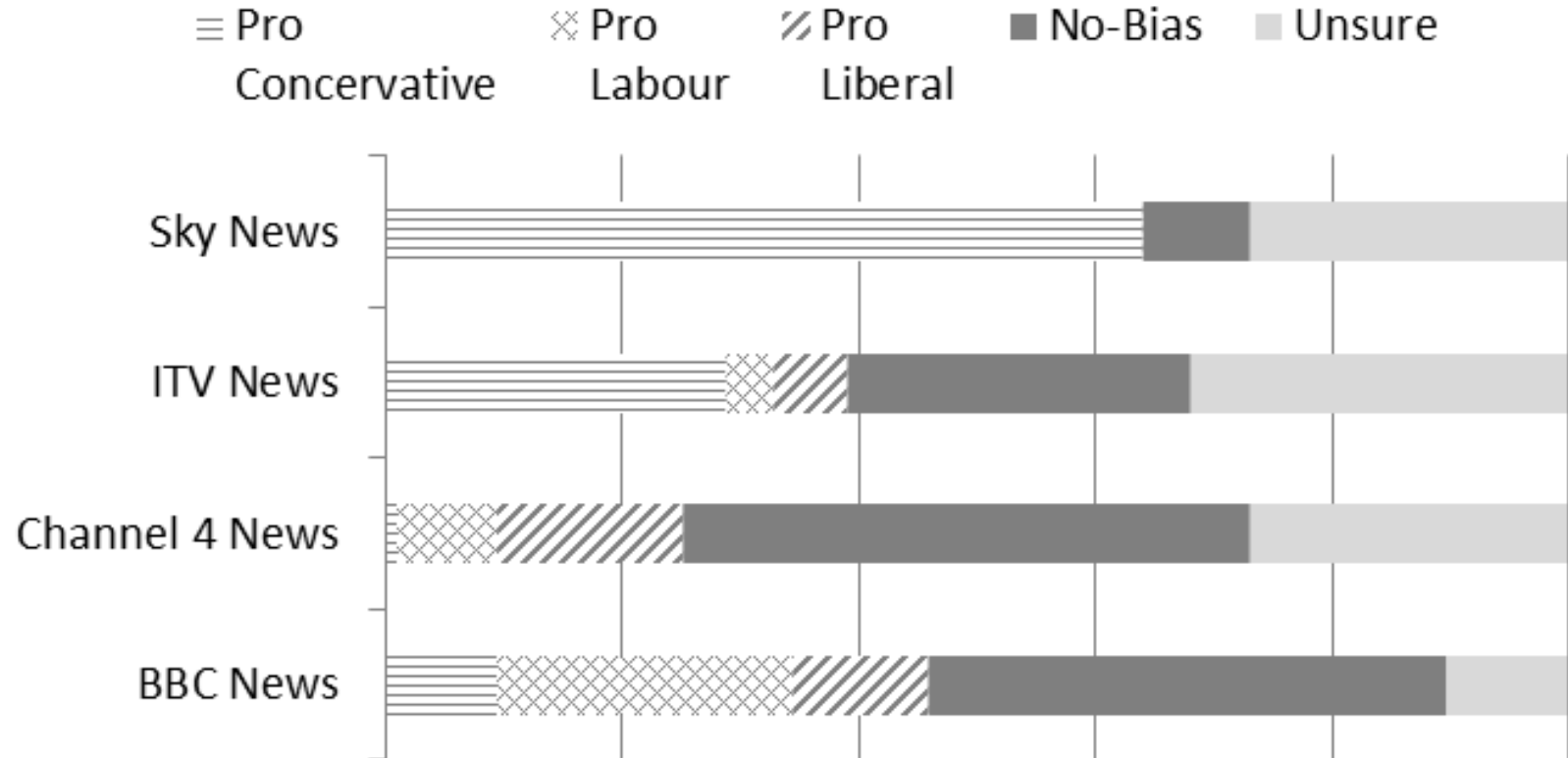


Media Bias Results

- Sky News has clear pro-Conservative bias and con-Labour.
- ITV displays pro-Conservative and con-Labour.
- Channel 4 slightly pro-Labour, and more pro-Liberal
- BBC News is more neutral and displays least bias

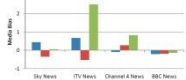


Survey of TV Media bias



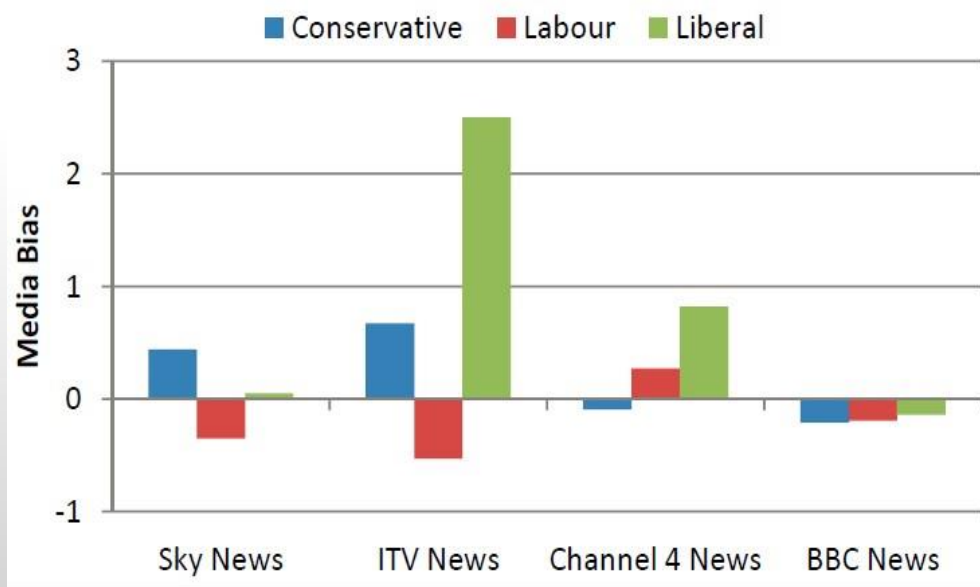
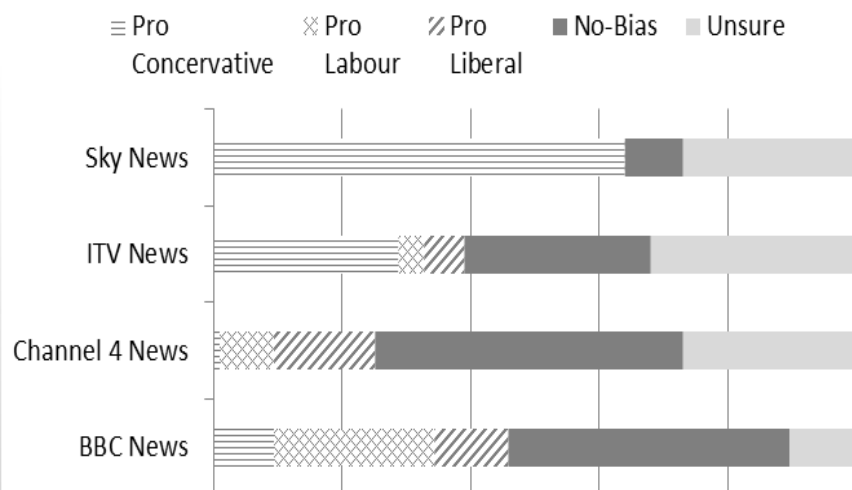
* Data is from The Media Blog survey about TV Media bias between 19th and 23rd April 2010





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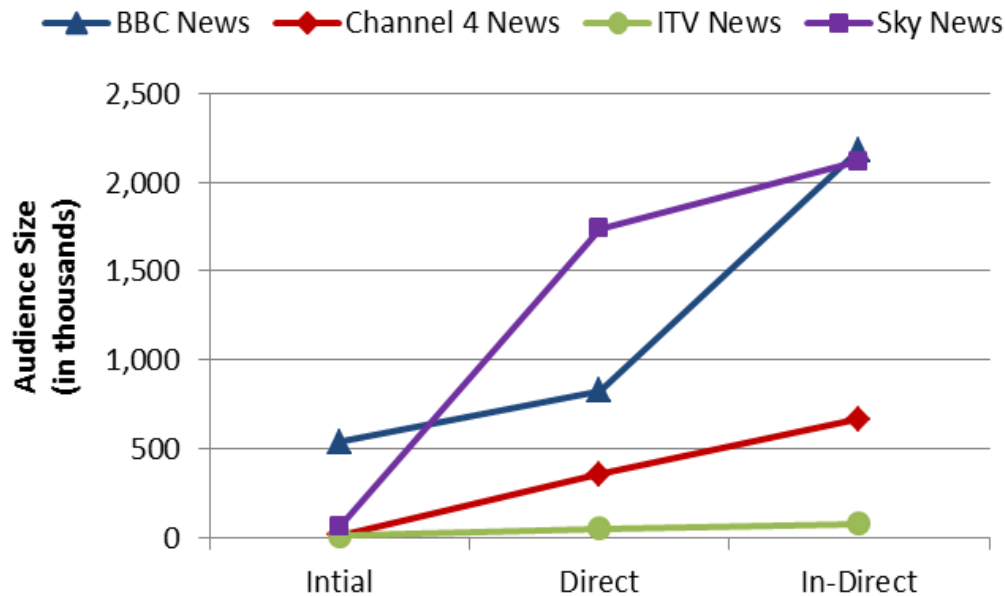
Media Intermediaries Analysis

- Extract all the retweet (RT) behaviors from the dataset.
 - **Direct RT:** messages retweeted by the followers of the source
 - **Indirect RT:** retweeted by users that are not the followers of the source.
 - **Intermediaries:** users who retweet messages from a source user directly.



Media Intermediaries Analysis

- **Initial:** follower number
- **Direct:** audience number after direct retweet
- **Indirect:** audience number after indirect retweet



Media Intermediaries Analysis

- Intermediaries Contribution to Media Influence.
The contribution of intermediary i to user j is denoted as:

$$Support_{ij} = C_{ij}^{RT} * || \{k \mid k \in F_j \text{ and } k \notin F_i\} ||$$

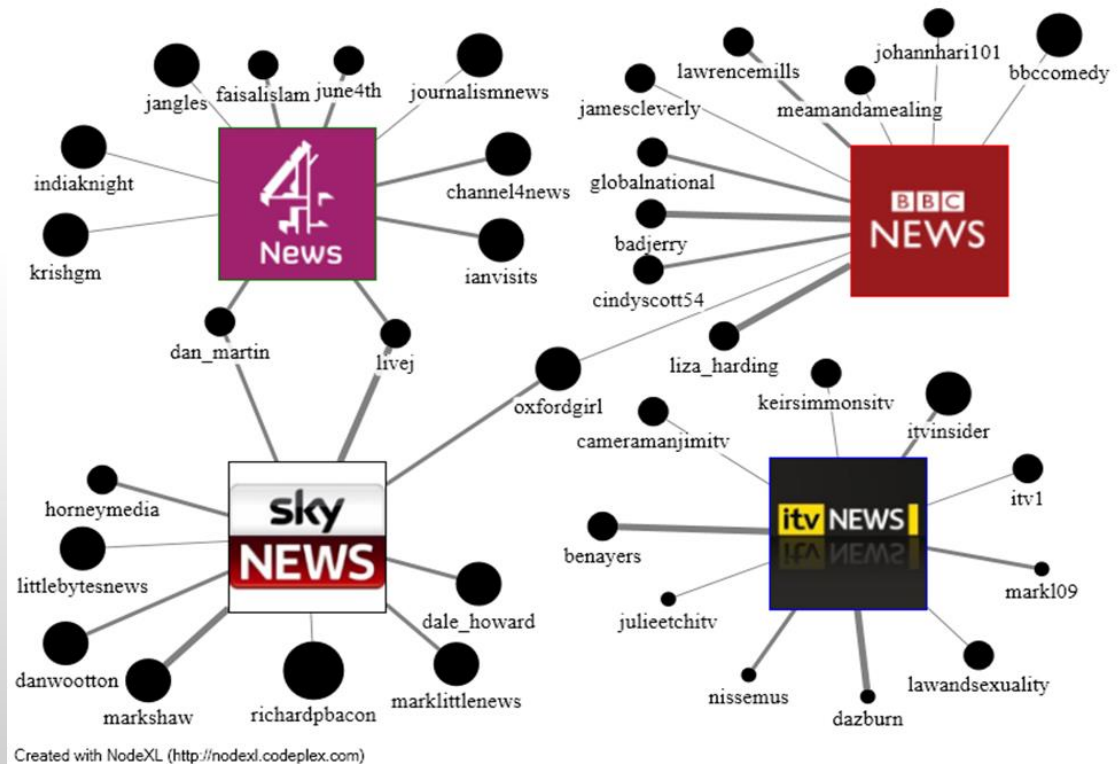
- C_{ij}^{RT} denotes the total directly retweet number by an intermediary j of user i .
- F_i denotes the number of followers of user i



Top 10 most important intermediaries

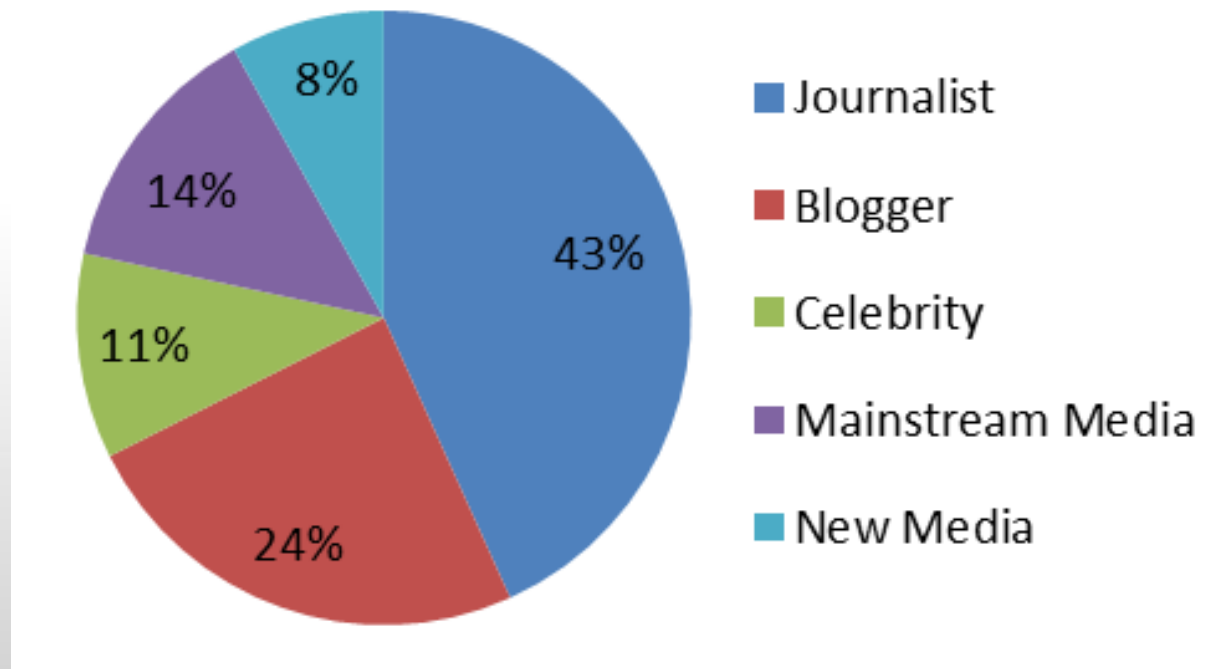
- **Node size:** follower number of intermediaries.
- **Link thickness:** directly retweet number

- Little overlap
- 37 distinct users



Top 10 most influential intermediaries

- Classify 37 users into 5 categories
- The majority is journalists followed by bloggers.



Top 10 most influential intermediaries

- Over half of the journalists who serve as intermediaries for these TV media organizations are actually not affiliated with them.
- Sky News has the most journalists as its intermediaries (6 out of 10). The growth rate of the audience size of Sky News is the fastest through direct retweeting.
- **Journalists play an important role for expanding influence on Twitter for mainstream media.**



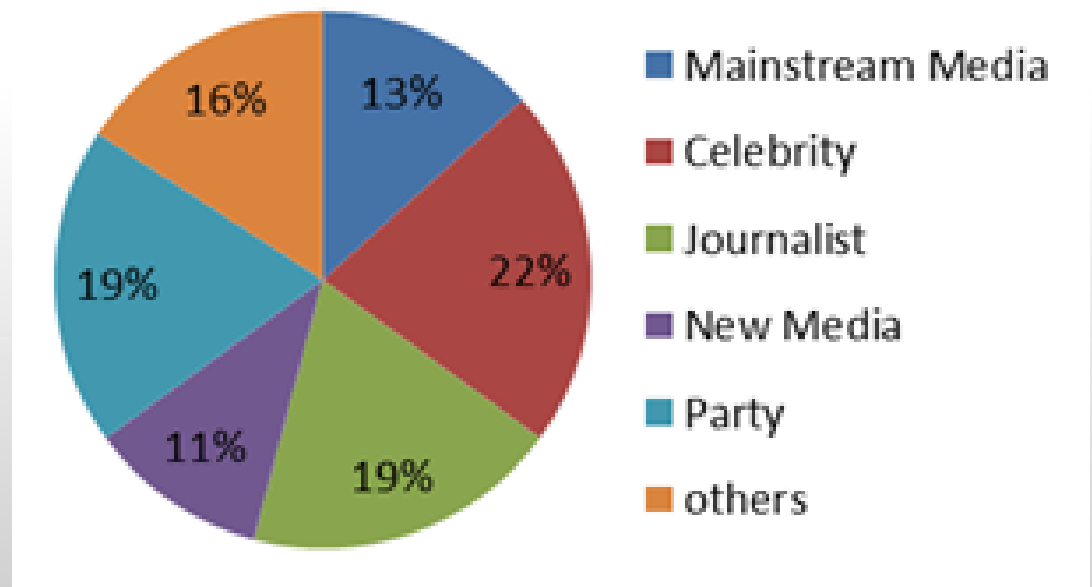
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Information Diffusion Analysis

- Extract user account with more than 100 retweet number and classify them into 6 categories.
- Celebrity is the biggest category with 26 users



Information Diffusion Analysis

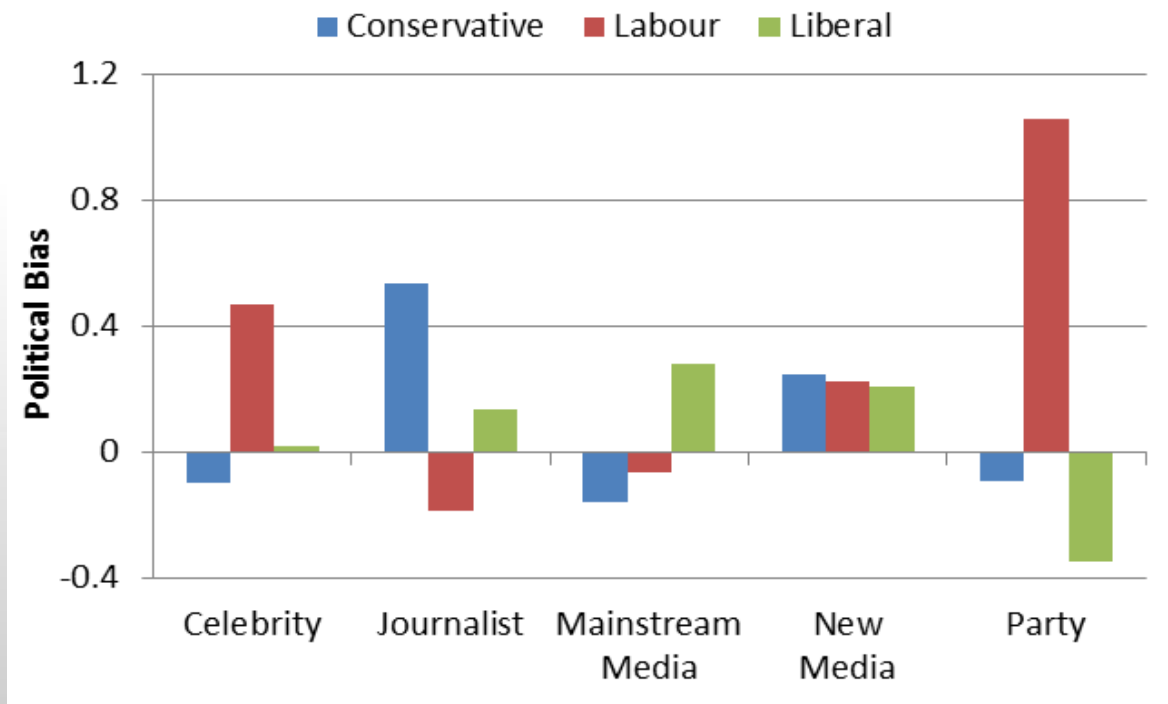
- *Retweet rate*: the retweet to tweet ratio.
- *Average Retweet times per tweet*: how many times a tweet has been retweeted on average.

Category	Avg. Follower No.	Tweet No.	RT Tweets	RT Times	RT Rate	Avg. RT Time Per tweet
Celebrity	458944	162	124	7670	0.765	61.855
Journalist	9277	948	791	9731	0.834	12.302
Mainstream Media	66060	1856	1502	11476	0.809	7.64
New Media	4184	4588	1583	7750	0.345	4.896
Party	7564	2033	1482	17768	0.729	11.989



Bias of various categories

- Bias exhibited by the Journalist category correlates well with the actual UK election results
- Accounts relating to political parties, 7 are from the Labour Party



Conclusion of social media analysis

- Mainstream media outlets rely on intermediaries to propagate information and the majority of their intermediaries is in fact journalists.
- Mainstream media seem lose their dominant position in shaping public opinions during the UK's general election.
- The Journalist category appears to have the strongest influence as it has the highest retweet rate and gets the highest average retweet times per tweet. Its bias also reflects the actual political landscape in real world.



Q & A



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