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Two Years of Influence: Tracking Changes in Twitter Influencer Diets in United States Politics

influencers, attention, clustering, longitudinal, communities

Extended Abstract

Influencers, defined as users who successfully cultivate attention from a large audience, are one of the primary draws of social media environments for users [1]. Influencers do not exist in isolation, but are knit together with other influencers in a complex web of mutual engagement, shared interests, and perhaps most importantly, shared audiences [2, 3, 4]. These webs of influence can have generate serious harms. Recent analyses based in the United States have shown how American political influencers have fostered widespread disbelief in, for example, election outcomes and the efficacy of vaccines [5, 6]. It is important, then, to understand how users travel through these networks: how their information diets may change from one influencer network, perhaps benign, to another, which is more troubling. To understand such trajectories, we analyze a unique dataset of users' Twitter retweet interactions with political influencers over a two-year period. We share preliminary findings about the micro, meso, and macro-level trends in user flow from influencer network to network.

Data

We analyze a dataset of 2B+ retweets collected over 22 months from 2021 to 2023. These data consist of all retweets made of posts from a reference set of over 3,000 political influencers associated with United States politics on the right, left, and fringes. This reference set of influencers was cultivated from earlier work on the 2020 United States presidential election, which surfaced popular users over a set of election-related terms [3]. This reference set includes celebrity influencers are typically understood, as well as accounts for media outlets, politicians, organizations, and other popular accounts.

Methods

To analyze this data, we divide our dataset into *user-months*: vectors of counts of retweets across our reference influencer set from a specific user during a specific month. We only preserve user-months with at least 10 total retweets, which leaves 10M+ user months for analysis. We reduce dimensionality with principal component analysis (PCA) for quantitative analysis and UMAP for data visualization. We use the hierarchical DBSCAN clustering algorithm to cluster the resulting feature space at different levels of generality. We then track, at different clustering scales, user migration from month-to-month between clusters, as well out of the dataset through inactivity.

Findings

We share preliminary findings at three different scales. Our analysis at different scales reflect the fact that there is no singular resolution at which communities exist, and so community analysis must be grounded in a *triangulation* of different scales. Our first analysis, the macro-scale

representing broad ideological groupings of hundreds of influencers, reaffirms a typical finding: there is almost no migration between right- and left-leaning influencers. There is, however, persistent out-migration away from traditional media outlets, such as online newspapers, in favor of personal influencers on both the right- and left. In our second analysis, at the meso-scale, we show a case study of migration trends in smaller communities of 10-50 infleuncers. Particularly, we document how audiences for elected democratic socialist politicians have, over time, migrated to un-elected social media-native socialist influencers. We conclude with our third analysis, at the micro-scale, which show how users move from one influencer to another. We describe "fan" users, i.e. users who retweet only one political influencer, and analyze fan users response to influencers being suspended from the platform. We also analyze the extent to which fan users diversify their interests over time, or deepen their fandom for single influencers. We conclude with analysis about how the relations between influencers themselves may have changed (or, surprisingly, remained static) over two years of audience activity.

References

[1] T Rosenstiel, J Sonderman, K Loker, M Ivancin, N Kjarval, Twitter and the news: How people use the social network to learn about the world. *American Press Institute* (2015).

[2] R Lewis, Alternative influence: Broadcasting the reactionary right on YouTube. (2018) Publisher: Data & Society Research Institute.

[3] Anonymized, Followback Clusters, Satellite Audiences, and Bridge Nodes: Coengagement Networks for the 2020 US Election. *Proceedings of the International AAAI Conference on Web and Social Media* (2023).

[4] C Abidin, Mapping internet celebrity on TikTok: Exploring attention economies and visibility labours. *Cultural Science Journal* **12**, 77–103 (2021).

[5] I Kennedy, et al., Repeat Spreaders and Election Delegitimization: A Comprehensive Dataset of Misinformation Tweets from the 2020 U.S. Election. *Journal of Quantitative Description: Digital Media* **2** (2022).

[6] RE Moran, I Grasso, K Koltai, Folk Theories of Avoiding Content Moderation: How Vaccine-Opposed Influencers Amplify Vaccine Opposition on Instagram. *Social Media+ Society* **8**, 20563051221144252 (2022) Publisher: SAGE Publications Sage UK: London, England.

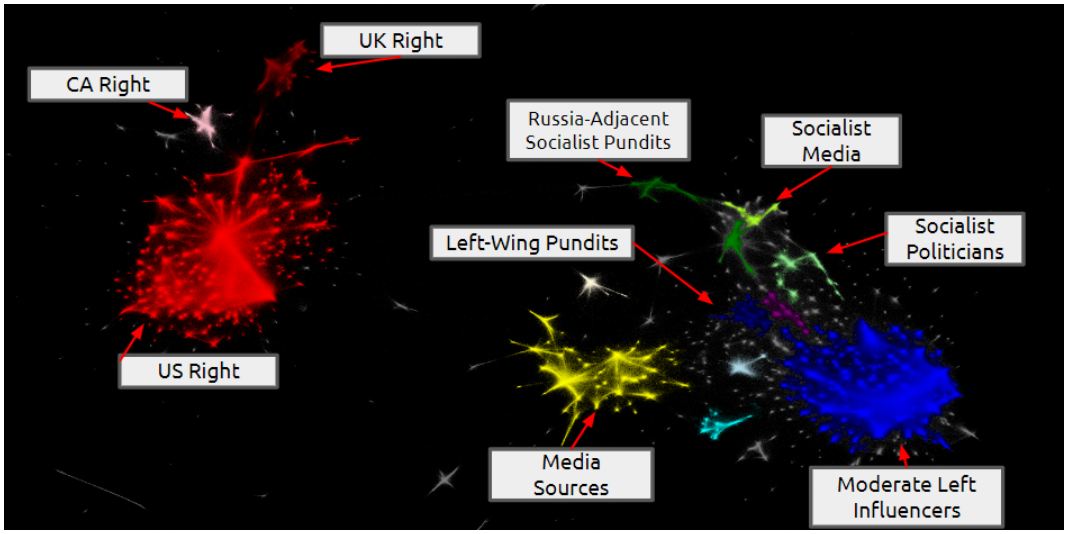

Figure 1: A UMAP visualization of user-months of influencer retweeting distributions. Each embedded point represents one user's retweeting patterns across 3,000 reference political influencers in the United States. Colors represent the result of a hierarchical clustering algorithm on these user-months, and clusters are labelled according to the most popular set of influencers for those user-months.