

## #Secim2023 Report: Analysis of Anomalous Followers

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### Introduction

Social media and particularly Twitter has a growing political hinterland for different aspects such as elections, rights, protests, and opinion sharing [1, 2, 3, 4, 5]. Despite social media’s significant role in political debates, there are individuals who continually devise novel methods to disseminate disinformation and propagate conspiracy theories [6, 7, 8, 9, 10]. In the context of elections, the manipulation of social media has become a major concern [11, 12]. Since political parties and candidates aim to broaden their public reach, social bots might play an essential role in their campaigns. Socio-political bot activity is a significant aspect of growing media landscape [13, 14, 15, 16, 17]. The upcoming Turkish elections are an important political issue, as they will reveal to what extent politics are influenced by bots. However, we should note that when bots target a politician, the impact may be positive or negative. While they can help to expand a politician’s public reach, they may also be used as part of a negative campaign against politicians who are being followed. In other words, they may use social media manipulations to their advantage, but they could also be targeted by manipulative tactics employed by their rivals. Therefore, we do not verify in this short report whether all the bot activity is a result of politicians’ intentional social media manipulations or concerted efforts to spread misinformation.

### Analysis and Results

We analyze the followers of politicians using our Secim2023 dataset [18]. Since it requires a significant number of API calls to collect the data on the followers, we can only update this data every 2 months. Using the dataset, we obtain the account creation times of the followers and we estimate the follow time of the politician.

First of all, we need to point out an important point: gaining and losing followers cannot be controlled by the account. In addition, accounts may be organic followers or they may be added using automation. In our follower number change analysis, we explained different mechanisms that may lead changes in followers. We are now conducting a detailed analysis of identifying these anomalous followers and when these anomalous followers interact with politicians.

When we examine the follower accounts in our data set and consider the creation dates of their accounts, we observe that the number of bot accounts is increasing before the important elections of Türkiye, and there has been an increase after March 2020, when the first case of Covid-19 was observed in Türkiye.

The follower heatmap shows the distribution of the followers of politicians on Twitter based on their follow order and profile creation dates. Users who follow politicians are ranked from the first follower to the last follower along the horizontal axis of the heatmap. The follower accounts’ creation dates are displayed on the vertical axis. Since politicians tend to have a high number of followers, we do not represent each follower as a single data point. Instead, each point in the graph represents a group of followers that fall in that

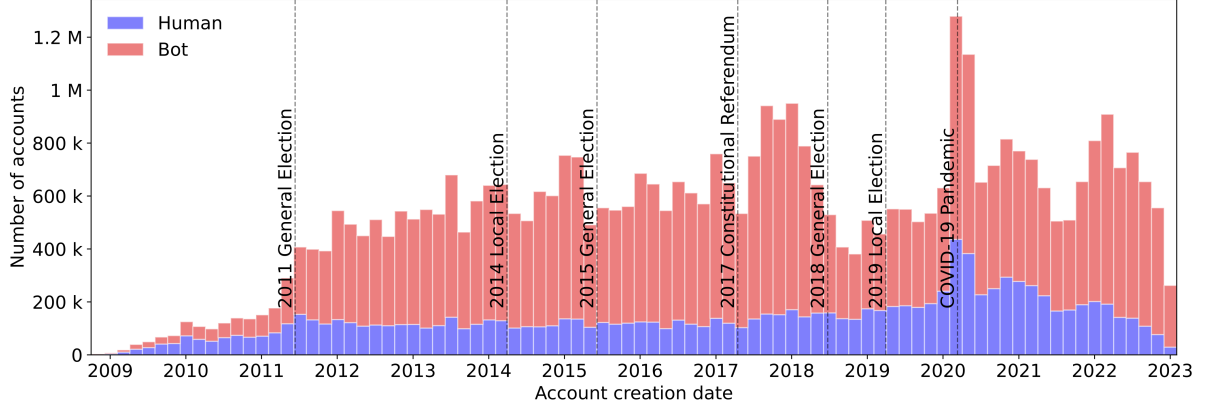


Figure 1: **Creation dates of follower accounts.** We analyze changes in creation rates of human and bot accounts. On average there is a slight increase in human accounts with the exception during the COVID-19. However, creation of bot accounts increases prior to previous elections and following the COVID-19 pandemic.

part of the graph, i.e., have a similar rank and profile creation date. The color used for each category corresponds to the accounts’ average bot score in this visualization (higher values or yellowish colors indicate a higher risk of bot behavior).

The tool also allows users to visualize based on followers like and post counts as well as their follower counts. Average statistics are displayed when the cursor is moved over each square in the graphic. We previously conducted an analysis to investigate followers of journalist accounts and pointed out distinct anomalies of followers [19].

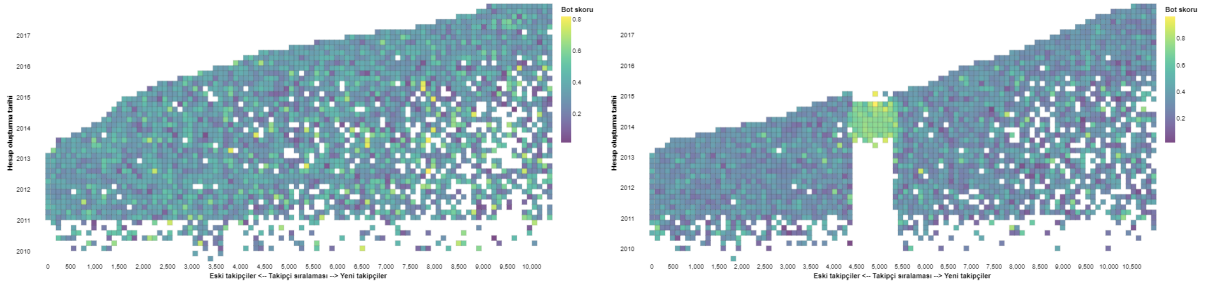


Figure 2: **Visualization of follower rank and creation dates.** We present an example chart where x-axis presents rank of a follower based on when they follow target account and y-axis presents the account creation time. Each cell in the heatmap corresponds to average bot score. We select examples with one real data (left) and one with anomalous followers (right).

The figure presents the follower distribution of a normal Twitter user in the top panel, while the bottom figure displays a user who has a group of fake followers added as synthetic data points to illustrate an example. For the second heatmap, notice that the followers between ranks 4500 and 5200 have been created in a similar period of time and also have high bot scores. Therefore, the second graph reflects a clear follower anomaly description. This is just one example of an anomalous follower case that you can observe in the graphs.

We investigated different political accounts from our dataset and selected some examples that exhibit a high number of bot followers in Fig 3. We use BotometerLite to calculate bot scores efficiently [20].

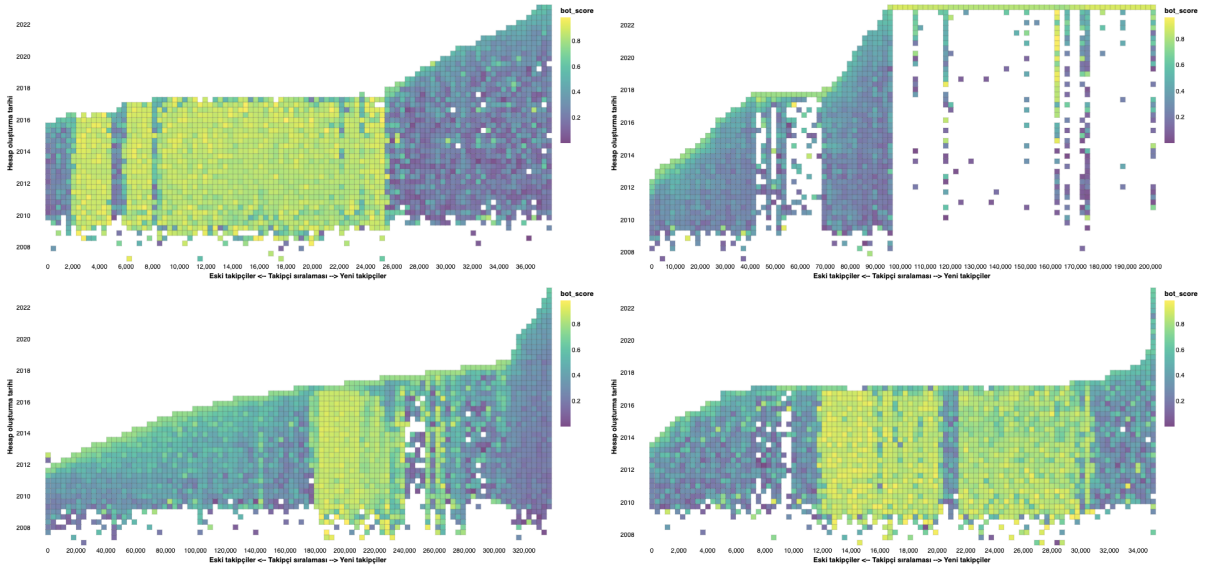


Figure 3: Politician from our dataset high fraction of bot followers that exhibit anomalous patterns.

## Discussion

The paper delves into the use of social bots in political campaigns, particularly in the context of the upcoming Turkish elections. We acknowledge the crucial role of social media in political debates but also highlight the increasing concern regarding disinformation and manipulation on these platforms. However, social bots can have both positive and negative impacts on a politician’s public reach, depending on their use as an advantage or part of a negative campaign against them.

We analyze the followers of politicians through their #Secim2023 dataset. We discover a rise in the number of bot accounts before important elections in Turkey, with a considerable increase observed after the first COVID-19 case was reported in the country in March 2020.

The electoral period has begun in Turkey, and the political environment is currently characterized by various electoral alliances scattered throughout the country [21]. Within a polarized electoral environment, the social media has become a contested place for the importance of identifying follower anomalies. We investigated that bot activity has increased, especially with the surge towards elections. In Turkey, disinformation and manipulation are particularly significant issues due to the narrowness of mainstream media and government pressure, which have led to the emergence of various online broadcasting services from individuals, alternative information sources, and media groups. As traditional mainstream media services lose their power, social media -particularly Twitter- has become the primary alternative source of information, where political debates, polarization and political echo chambers take place [22, 23]. Our work shows the dynamics of follower anomalies within this setting.

The interface <sup>1</sup> for follower anomaly allows users to access the follower network and bot scores of almost all politicians. As a concluding remark, we need to underline that our interactive charts for detecting bot activity can create a public awareness towards online manipulation. This might be an open modality of deterring intentional bot activity. For a future concern, if social bots increase as elections approach, then what might be the tasks that these bots can do? An in-depth analysis of bot activity and their concerted action

<sup>1</sup><https://secim2023.biz/apps/follower-anomaly/>

might be useful to deal with disinformation and online manipulation. Further research can illuminate many aspect of these bots’ capabilities. Our dataset can fill a significant gap in this regard.

## Contributions

All VRL lab members contributed to the discussions. OV conceived and planned the research, contributed to data collection, analysis, and report writing. YZ analyzed the data and prepared interactive visualizations. NM contributed data analysis, literature review and writing. Graduation student team (Mustafa Seren, Irmak Çoban, and Arda Göktaş) created interactive visualizations.

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