

The Russian Music Ecosystem on Spotify*

An Analysis of How Pro- and Anti-Kremlin Artists are Engaged With and Recommended

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Following Russia’s escalated invasion of Ukraine in February 2022, countries around the world have sought to end business dealings with Russian companies and boycott pro-Russian public figures. This widespread effort has gone from the highest levels of business and government, to individuals opting to no longer purchase Russian goods or engage with Russian popular culture. This report uses data collected from Spotify API to address two main research questions: Is there a difference in popularity and follower count between pro- and anti-Kremlin Russian artists, and; two, how are Spotify’s recommendation features impacting engagement with Russian artists, and is it able to differentiate between the political leanings of these artists? Among the main findings is that the artist’s political affiliation does not seem to have a strong impact on their popularity or following, and that Spotify’s recommendations (for both pro- and anti-Kremlin artists) largely promotes the work of artists who have either been supportive of the Putin regime, or stayed silent amid the violence.

1 Introduction

Amid much of the Western world’s efforts to sanction oligarchs, Kremlin-affiliated figures, and Russian businesses, the international movement to limit engagement with Russian popular culture has been an interesting side effect of the conflict. Following Russia’s escalated invasion of Ukraine in February 2022, many Ukrainians and Ukrainian allies have rejected any forms of cultural engagement with Russian artists and the Russian language, which ranges from boycotting Western businesses still operating in the country to impacting the music people listen to.

*Code and data are available at: <https://github.com/rutykorotaev/finalpaper>

This research paper looks at data collected through Spotify API (Charlie Thompson and Wolff 2022) to understand how politics may play a role in the popularity and follower count of openly pro- and anti-Kremlin Russian musicians, as well as the role that Spotify plays in recommending these artists to users. The paper will also explore the relationship between an artist’s popularity rating and their follower count, to see if there is a correlation between the two factors.

Among the pro-Kremlin artists are Basta, Eldzhey, Max Korzh, and Skryptonite, while the anti-Kremlin artists (many of whom have been banned from Russia) are FACE, IC3PEAK, Noize MC, and Oxxxymiron. By pro- and anti-Kremlin, these definitions refer to whether the artist has made a point to speak out against President Vladimir Putin and the war that the Kremlin is waging against Ukraine. Pro-Kremlin artists are classified as those who have either been openly supportive of the war effort, or those who have stayed largely silent, making no mention of the war on their social media accounts, and continue to give concerts in Russia. Anti-Kremlin artists are those who have made public statements condemning the war on their social media, which has resulted in many of them having to leave the country and continue operations in the diaspora, and their music often getting banned within Russia.

The second theme explored in this paper borrows from literature around other social media outlets and how their recommendation algorithms can lead users down certain “mass radicalization” rabbit holes (Moskalenko 2021). While recommendations are most often harmless, at its worst, it can lead people down paths to radicalization, entrenching users into information environments that spread mis- and disinformation, conspiracy theories, and other manipulative rhetoric (Georgia Hollewell 2022) (Shree 2019).

YouTube often appears at the centre of this literature, as numerous informational enclaves have been discovered on the site, including ones associated with the far-right and far-left (Harindranath 2017) (Champion 2021). However, scholars have noted that the YouTube recommendation algorithm is based on a combination of user preferences, platform features, and supply-and-demand dynamics, and there is disagreement on the extent to which YouTube actually supports the creation of these online communities (Homa Hosseinmardi 2021). Others still have argued that the algorithm is actively working to recommend videos that lead users outside these radicalization “rabbit holes” altogether (Ledwich and Zaitsev 2020).

Taking this literature into consideration, this paper analyzes how Spotify’s recommendation features might encourage or discourage users to engage with Russian artists across the political spectrum, and whether it takes into account the very open political views of some of these artists.

1.1 Paper Structure

This paper is divided into several main sections. The Data sections (Section 2 and Section 2.2) provide details on how the data was collected, what functions were used to gather the data, and what variables were explored to look at the main two research questions, which focus on

how artist politics may impact the popularity of an artist, and what kinds of recommendations are made by Spotify for artists. All graphs and visualizations can be found in this section.

Section 4 will provide an overview of the main results of the visualizations, which will then be further explored in Section 5. Three main findings are noted in Section 5.1, Section 5.2, and Section 5.3, which draw on conclusions made from the data. Finally, project limitations and ideas for potential next steps can be found in Section 6, which will discuss the various issues related with the dataset and the Spotify API apparatus, as well as potential improvements for future projects. The section will also discuss how the author’s personal biases may have played a role in impacting the results of the study.

2 Data: Popularity and Followers

This paper uses data collected using the Spotify API “spotifyr” (Charlie Thompson and Wolff 2022), and visualizes data from four top pro-Kremlin Russian artists and four top anti-Kremlin Russian artists to understand how and if their Spotify popularity score is impacted by their political views. As part of this, the main variables that were used in this analysis include the popularity and total followers value which were extracted using the `get_artists` function. In addition, I used data from the `get_related_artists` function, that shows the top 20 artists that come up in Spotify’s recommendations when searching any given musician.

This paper uses R (R Core Team 2020) to analyze the dataset, as well as several R packages, including “tidyverse” (Wickham et al. 2019), “dplyr” (Wickham et al. 2021), and “knitr” (Xie 2021). For the graphs, this paper used the “Lollipop” and “Scatterplot” templates provided on R Graph Gallery (Holtz 2018).

2.1 Exploring the Popularity and Follower Count Variables: Pro- vs. Anti-Kremlin Russian Artists on Spotify

To start, Figure 1 and Figure 2 use the `get_artists` function to attain data on total follower count, Spotify’s popularity rating, as well as the artist name and Spotify ID. Below, Figure 1 hones in on the popularity variable and compares the popularity between pro- (in red) and anti-Kremlin (in blue) artists. Figure 2 then looks at whether there is a correlation between the artists’ follower counts and their popularity score.

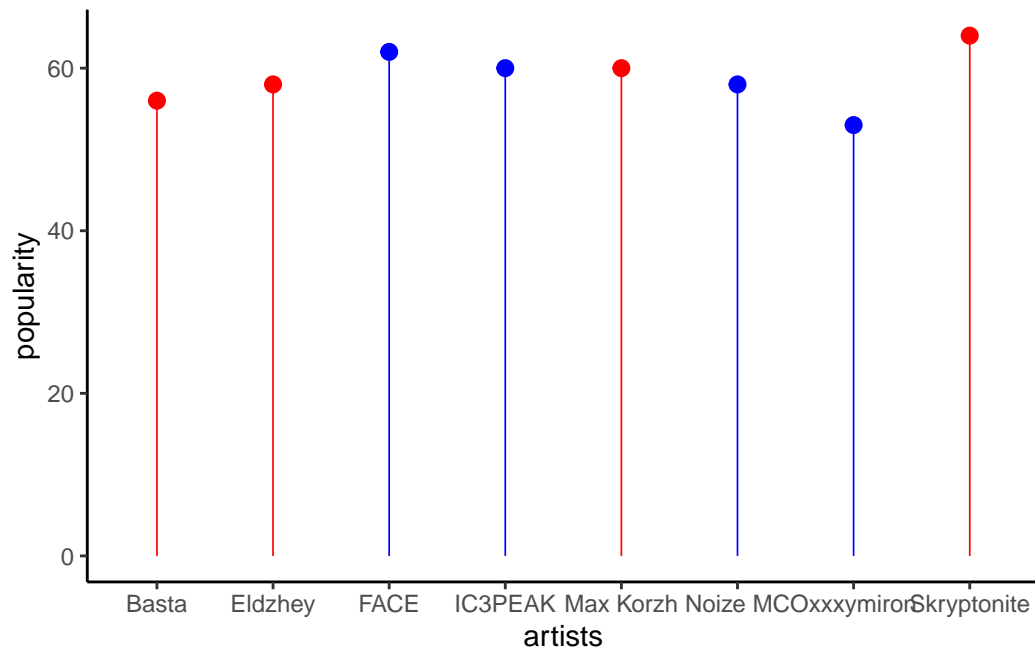


Figure 1: Popularity of Anti- and Pro-Kremlin Russian Artists on Spotify

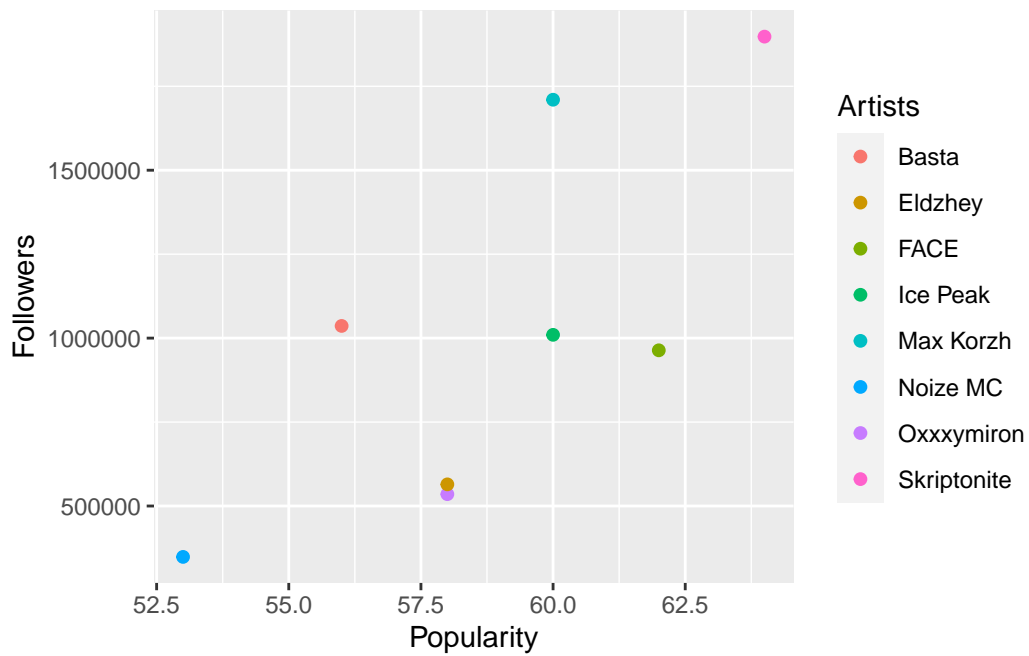


Figure 2: Correlation Between Follower Count and Popularity Score

2.2 Data: Spotify Recommendations

The following visualizations pertain to the second part of this paper’s analysis, which uses the `get_related_artists` function in order to get a list of the top 20 artists that are recommended by Spotify for each artist. In all the graphs in this section, artists deemed as pro-Kremlin have been highlighted in red, while the anti-Kremlin figures are highlighted in blue. In Figure 6, there were many recommended artists that were not Russian, so they have been outlined in green.

As part of the project analysis, each artist that came up in the recommendations was manually reviewed per the definitions highlighted in Section 1. This included analyzing each artist’s social media platforms, seeing if there have been any statements or songs about the war or the Putin regime, and noting if they are still giving concerts in Russia.

The below visualizations show the recommendations for the pro-Russian artists Eldzhey, Basta, and Max Korzh, as well as the anti-Russian ones, including Oxxxymiron, Noize MC, and IC3PEAK. The other two artists, Skryptonite and FACE, who had the highest popularity ranking for their respective groups, will be explored further down in Section 3.

2.2.1 Spotify Recommendations for Eldzhey

In Figure 3, we look at the recommendations for the artist Eldzhey, whose real name is Alexey Uzenyuk and is one of Russia's most prominent rappers and has been openly supportive of the war in Ukraine. He has been officially banned from entering Ukraine, following a concert he gave in 2018 in the Russian-occupied region of Crimea.

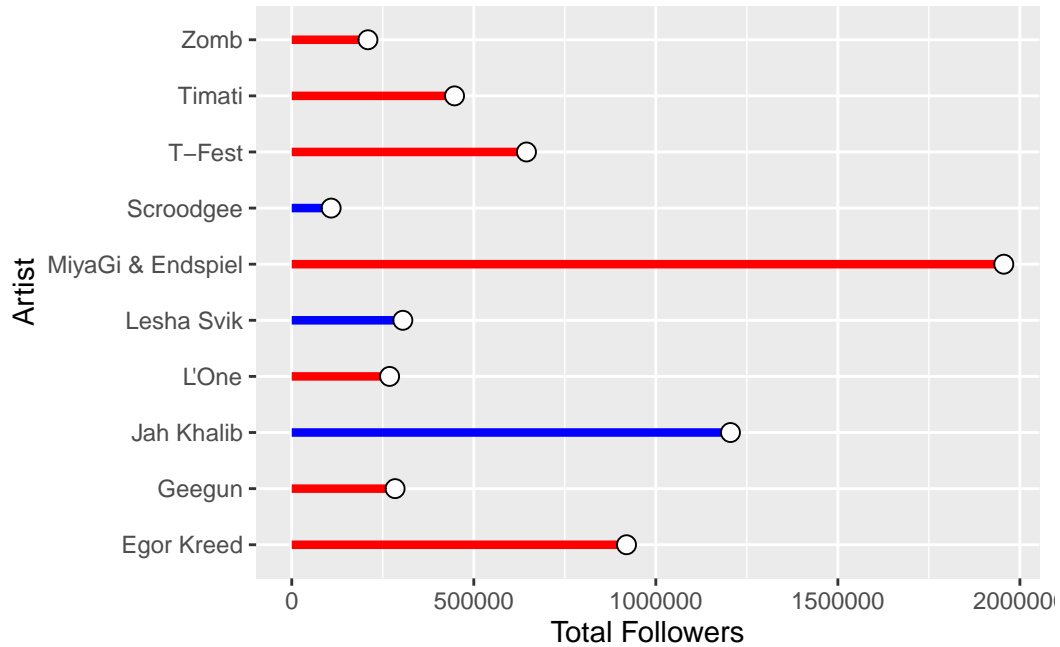


Figure 3: Spotify Recommendations for Eldzhey

2.2.2 Spotify Recommendations for Max Korzh

The following graphic in Figure 4 shows the related artists for the pro-Russian artist Maxim (Max) Korzh. While Korzh is a Belarusian musician, he sings in Russian and continues to perform widely throughout Russia and has previously been denied entry into Ukraine. However, he recently released a song that is viewed as anti-war, though not overly supportive of Ukraine.

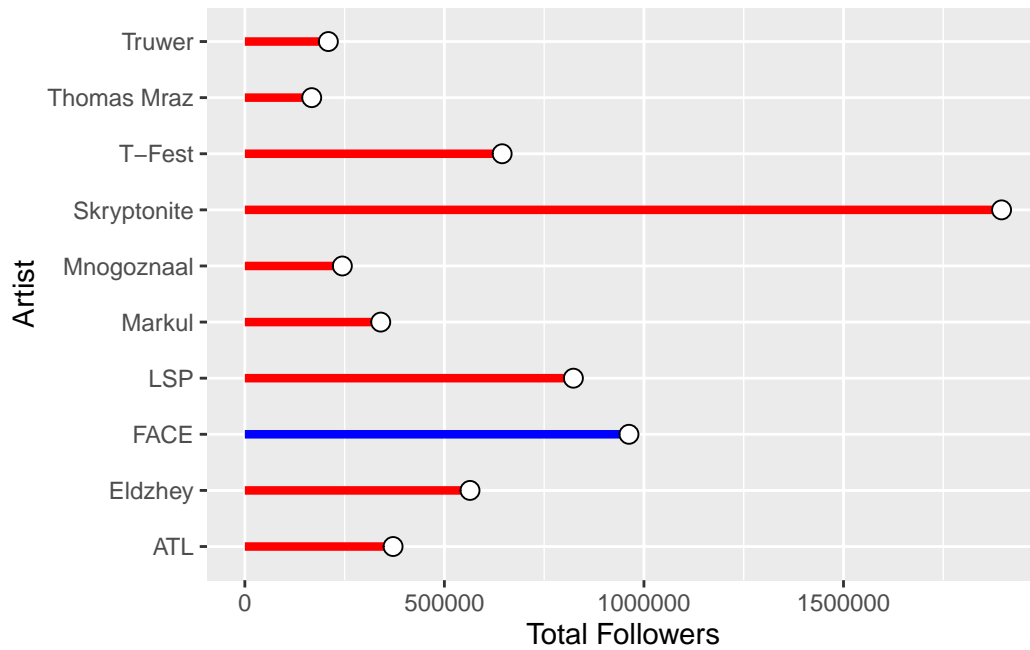


Figure 4: Spotify Recommendations for Max Korzh

2.2.3 Spotify Recommendations for Basta

In Figure 5, we can see the top artists that were recommended for the pro-Kremlin rapper Basta, whose real name is Vasiliy Vakulenko but is more commonly known as his stage name “Noggano.” He has been a long-time supporter for Russian aggression against Ukraine: In 2017, he was banned from entering Ukraine following his performance in Russian-occupied Crimea. In 2023, Ukraine officially imposed sanctions on him.

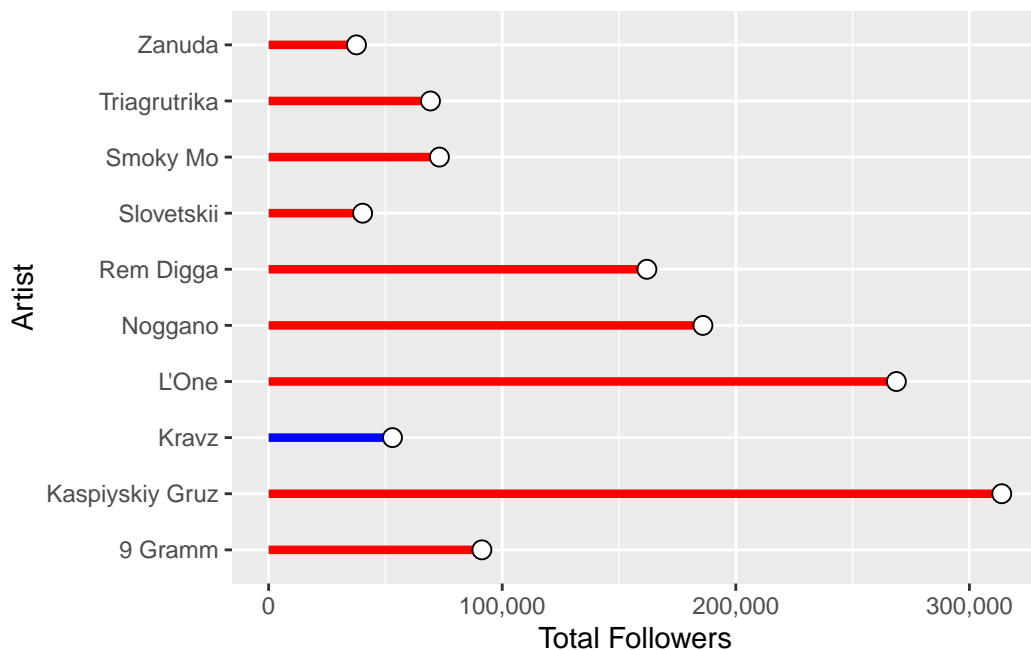


Figure 5: Spotify Recommendations for Basta

2.2.4 Spotify Recommendations for IC3PEAK

Moving onto artists who have been vocal in speaking out against the Kremlin, Figure 6 shows the recommended artists for IC3PEAK. IC3PEAK is the name of a Russian electro-music band consisting of Anastasia Kreslina and Nikolay Kostilev. Much of their band's music has openly political undertones related to their criticism of the Kremlin, which has led to their songs being censored or banned within Russia. Because of their open criticism of the Kremlin, they have received a lot of support from like-minded Russian speakers in the West as well as within Russia.

This graph stands out from the other ones because very few of their recommended artists are Russian. As Figure 6 shows, the green represents artists who are international (which include artists from the United Kingdom, Canada, the United States, and Australia). The two red ones are for artists deemed to be pro-Kremlin.

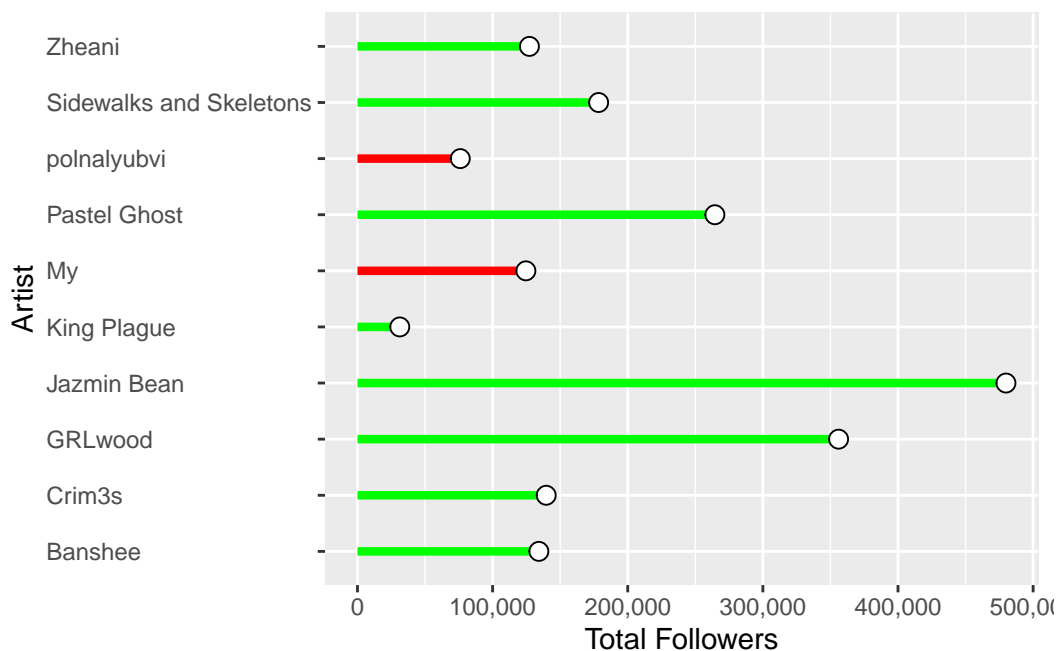


Figure 6: Spotify Recommendations for IC3PEAK

2.2.5 Spotify Recommendations for Oxxxymiron

In Figure 7, we have a graph outlining the recommendations for Oxxxymiron, whose real name is Miron Fyodorov. He is one of the most influential rappers in Russia and has been a very outspoken critic of the war and of the Kremlin leadership. Due to his words against the Russian leadership, he has named a “foreign agent” by the Kremlin, which has led him to seek refuge abroad and he no longer has the ability to perform inside Russia. In 2023, a court in St. Petersburg ordered him to pay a fine of 70,000 rubles for his music having lyrics that openly criticized the Russian invasion of Ukraine.

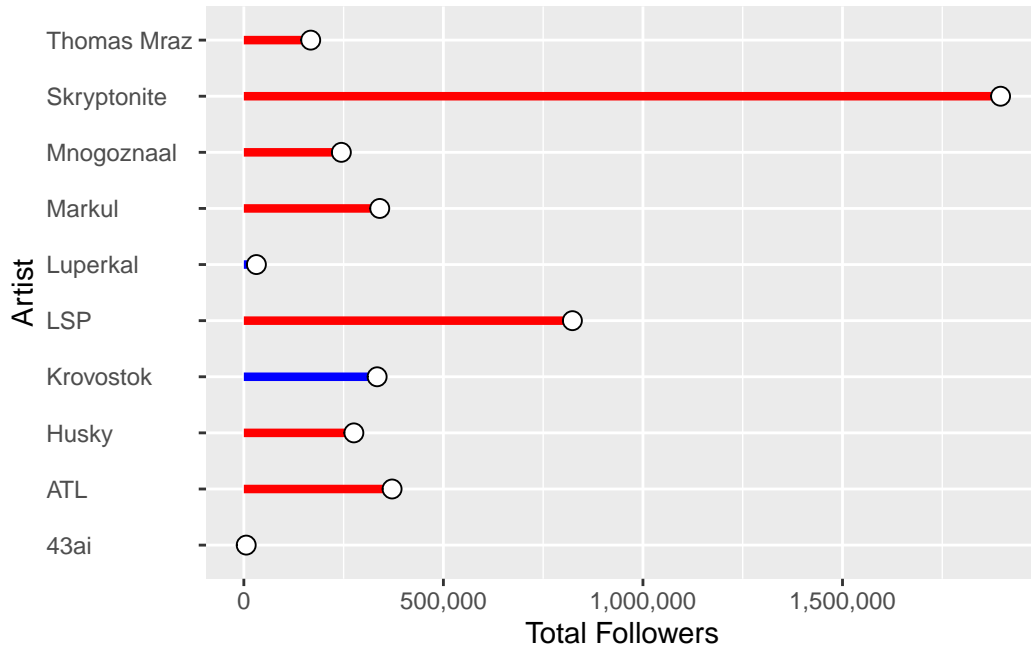


Figure 7: Spotify Recommendations for Oxxxymiron

2.2.6 Spotify Recommendations for Noize MC

Figure 8 shows the graph for Spotify’s recommendations for NOIZE MC, whose real name Ivan Alekseyev. A rapper, singer, and actor, he has long been vocal about his criticism of Russian aggression against Ukraine. In 2014, following the war, he has also been very outspoken in his support for Ukraine, where he flew the Ukrainian flag and dedicated his performance to “the victims of information warfare.” Since then, local authorities have cancelled the majority of his concerts, and as tensions with Ukraine grew, his music was considered blacklisted across the country. Following the 2022 invasion, NOIZE MC has left Russia and continues to participate in Ukraine solidarity events and peace alliance groups.

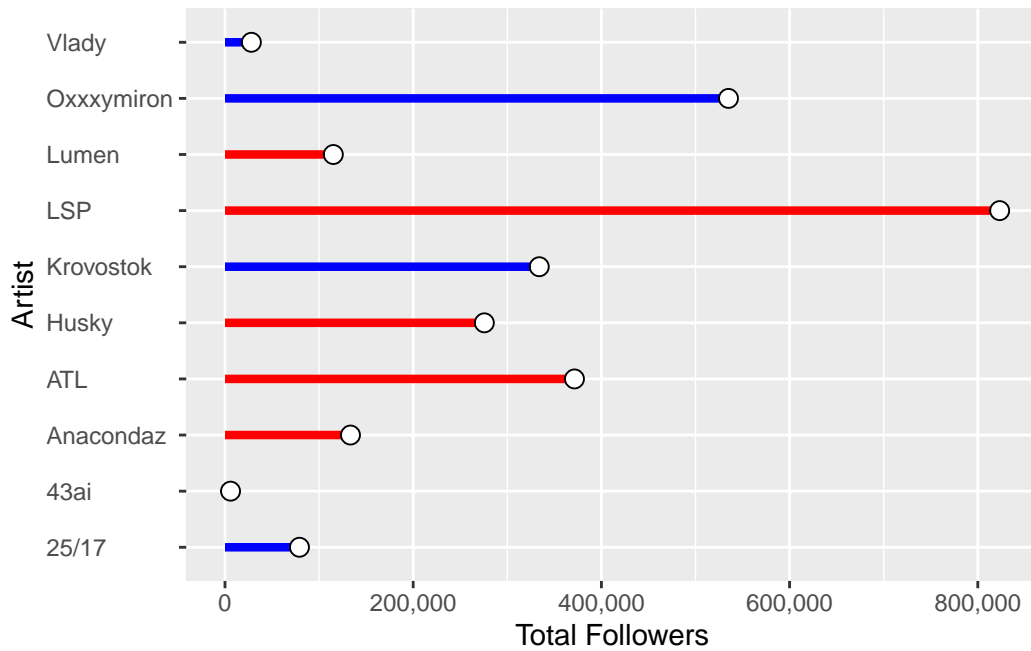


Figure 8: Spotify Recommendations for Noize MC

3 Model

This section looks at the two most popular artists from each political camp, identified in Figure 1. From the pro-Kremlin group, Skryptonite, whose real name is Adil Zhalelov, was selected. He is a Kazakh rapper who has generally remained quiet about the war in Ukraine and continues to perform around the country. FACE, also known as Ivan Dryomin, was the highest in popularity among the anti-Kremlin performers. Due to his criticism of the Kremlin and the war in Ukraine, he has been forced out of Russia after being named a “foreign agent” by the government.

Figure 9 is a logistic regressive model that looks at Skryptonite and FACE, reviewing the top 20 artists that appear as recommendations from Spotify for each artist (total of 40). A manual analysis was conducted to determine whether a given recommended musician was supportive of the Putin regime or not, with those being deemed pro-Kremlin being assigned a “1” value and those against Putin being assigned “0”.

The `data.frame` function created a data frame with two main columns: One was for artists who are Pro-Russian, called “Pro_Russia” and the other was “Spotify_Recommendations.” Both columns contain the binary values that indicate, as mentioned above, whether they are pro-Kremlin (1) or anti-Kremlin (0). The `glm` function then applies a logistic regression model to the data, with `Spotify_Recommendations` being the outcome variable, and `Pro_Russia` being the predictor variable. The `family` argument specifies that a binomial distribution should be used, since the outcome variable is binary.

The `coef` function extracts the coefficients from the fitted model, which represent the log odds of being recommended pro-Russia artists given that an artist is pro-Russia (compared to being anti-Russia). The `exp(coef(model))` code finds the exponentiated coefficients, which represent the odds ratios of being recommended pro-Russia artists given that an artist is pro-Russia (compared to being anti-Russia).

3.0.1 Logistic Regressive Model Reviewing the Predictability of Spotify Recommendations for Russian Artists

The odds ratio to get the log odds is: 854535428 6.631283e-09

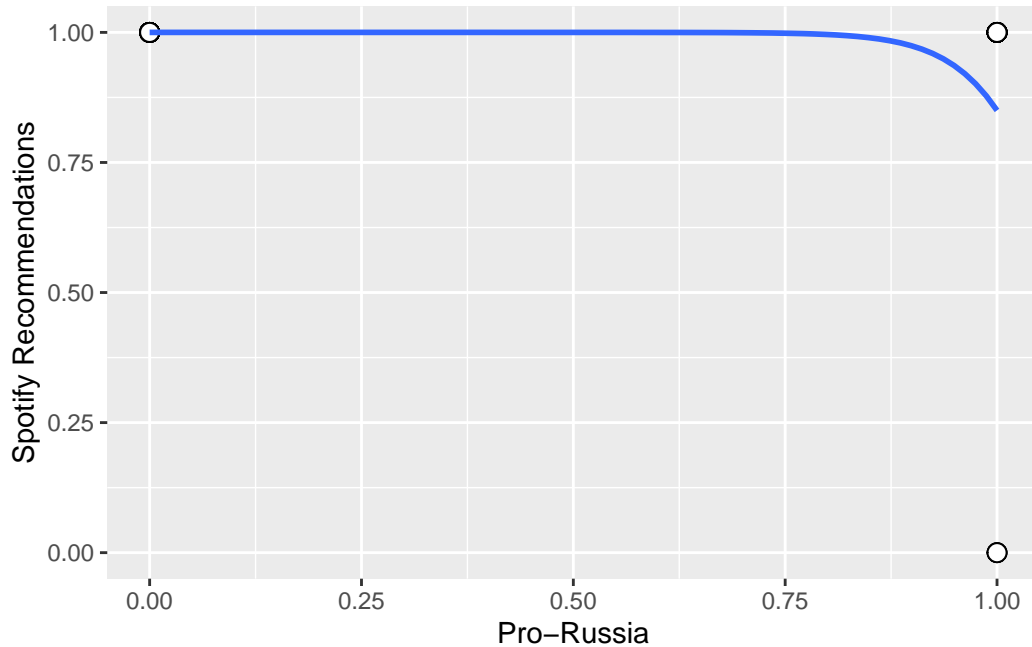


Figure 9: Spotify's Recommended Artists for Skryptonite and FACE

4 Results

4.1 Popularity Results

There are several key results that can be gleaned from the above visualizations. First, as Figure 1 and Figure 2 show, we can see that the pro-Kremlin artists (who are outlined in red) and the anti-Kremlin artists (in blue) do not have significant differences in popularity based on Spotify's rating. We can see in both graphs that Skryptonite, a pro-Russian rapper, ranks as the most popular and has the most amount of followers. Similarly, NOIZE MC had both the lowest following and lowest popularity rating.

We see these popularity ratings reflected also in Figure 2, which looked at the correlation between the popularity score and follower values. It shows that follower count can vary greatly among the popularity scores, with Basta, IC3PEAK, and FACE all having similar follower

numbers, but very different popularity ratings. FACE, despite having significantly less followers than Skryptonite, was the second-most popular artist, followed closely behind by Max Korzh and IC3PEAK.

Interestingly, IC3PEAK and Eldzhey are two artists on opposite ends of the political spectrum and are both very open about their views, yet they each have a popularity rating of “60.” However, Max Korzh has over 700,000 more followers than IC3PEAK. Three out of the four pro-Russian artists were in the top three of musicians with the most amount of followers, with three of the anti-Kremlin artists having the three lowest popularity scores.

4.2 Related Artists Results

4.2.1 Pro-Kremlin Related Artists

Among the six visualizations for the Related Artists analysis, the main finding is that among both the pro- and anti-Kremlin artists, the vast majority of the artists recommended by Spotify are ones that have been deemed as pro-Kremlin (i.e. no mentions of the war in Ukraine and they continue to hold concerts within Russia).

Looking at the pro-Kremlin artists, visualized in Figure 3, Figure 4, and Figure 5, all had between 1 to 3 anti-Kremlin artists. Eldzhey was the only artist that received a recommendation for a Ukrainian musician, “Scroodgee”, though he still sings in Russian. There was also very little overlap between the top ten recommended artists for the pro-Kremlin performers. The artists that did overlap came in very different orders. Out of the three pro-Kremlin artists reviewed in this section, Figure 3 had the most anti-Kremlin/pro-Ukrainian artists in the top ten recommended.

4.2.2 Anti-Kremlin Related Artists

In reviewing anti-Kremlin artists in Figure 7, Figure 8, and Figure 6, there are slightly different results for these musicians. While NOIZE MC and Oxxxymiron, despite being known for their anti-Kremlin stances and the political undertones in their music, received a lot of pro-Kremlin artists in their Spotify recommended section. The two artists had many of the same recommended artists, with the performers LSP, ATL, 43ai, Husky, Krovostok all appearing their top 10 recommended lists, though in different orders. Oxxxymiron had two recommended artists that were anti-Kremlin, while NOIZE MC had three.

IC3PEAK, seen in Figure 6, stands out from the rest of the graphs in the section in that they received mostly international artists as recommended, including those from the United Kingdom, Australia, Canada, and the United States. For IC3PEAK, having reviewed the artists in their top ten, the recommendations seem to be more focused on musical genre rather than language. This difference in recommendations could also be explained by the fact that IC3PEAK has a lot more music in English than the other artists do. Additionally, the two

pro-Kremlin artists that came up on IC3PEAK’s list do not appear in any of the other lists analyzed in this project.

5 Discussion

5.1 Finding 1: Popularity and Politics Not Necessarily Related

The first finding is that an artist’s political affiliation does not seem to play a significant role in their Spotify popularity rating, as seen in Figure 1. However, Figure 2 demonstrates that pro-Kremlin artists appear to be more popular among Russian-speaking users on Spotify, with Skryptonite being the most popular with the largest amount of followers. As mentioned above, three of the pro-Kremlin artists were among the most popular out of the artist analyzed, and the anti-Kremlin artists generally had lower ratings and follower counts.

At the same time, given the discrepancy between follower count and popularity rating between some of the artists – notably the large difference in following between Max Korzh and IC3PEAK yet same popularity rating – demonstrates that the popularity rating considers other factors aside from an artist’s follower count. As such, the main finding that can be concluded from this section is that the popularity rating is not solely linked to an artist’s follower count, and artists with lower followings – as noted with FACE and IC3PEAK – can have similar popularity ratings to artists with higher followings.

5.2 Finding 2: Mostly Pro-Kremlin Recommendations

Another finding from this report relates to the data collected on Spotify’s recommendations. In reviewing the six graphs developed in this section, the majority of the charts were mostly in red, both among the pro- and anti-Kremlin artists. Based on this, we can see the majority of recommendations are for pro-Kremlin artists. This seems also to demonstrate that the Spotify algorithm does not differentiate between the political views of artists, despite many of them being vocal about their perspectives and embedding strong political undertones in their work.

Moreover, in reviewing the results of the logistic regressive model in Section 3, which seeks to predict how likely Spotify is to recommend a pro-Russian artist, the results indicate that the Spotify algorithm is much more likely to recommend a pro-Kremlin artist, based on the data collected for the eight musicians analyzed for this report. Had the sample been larger, this could potentially have created a different result.

Another finding is that the algorithm is able to differentiate between Russian and Ukrainian artists. Even though IC3PEAK received a lot of recommendations for international artists,

none of the artist analyzed in this report had recommendations for Ukrainian artists who performed in Ukrainian. As such, while this might be based more on language data, the algorithm is able to understand the differences between these two very different political groups.

5.3 Finding 3: Lack of Recommendation Overlap Among Artists

Another finding relates to the lack of overlap among the artists that are recommended for pro-Kremlin artists. In reviewing the visualizations in Section 2.2, we can see that among the pro-Kremlin artists, very few of the recommended musicians overlap with each artist and if they do overlap, then they have very different rankings within each group. What can be understood by this is that, even though it is promoting mostly pro-Kremlin artists, there is a lot of diversity within this online ecosystem, instead of having just a few main artists that are constantly being recommended.

On the other hand, among the anti-Kremlin artists, notably for NOIZE MC and Oxxxymiron, there was a lot of overlap in their top ten artists. Further, the recommendations for IC3PEAK also show that in some cases, despite being highly political in content, because much of their music is in English, the Spotify algorithm opted to recommend more English-language artists that fall outside of the Russian-speaking music world.

In going back to the literature on social media platforms creating online information communities that can lead to radicalization, Spotify does not seem to be doing this despite the fact that much of its recommendations were pro-Russian. The diversity of artists within the recommended list (with very little overlap among the pro-Russian group), seems varied enough that it is not actively encouraging users to only listen to artists who are supportive of one specific political faction. In addition, while the anti-Kremlin artists were often very political, the artists that have been deemed pro-Putin largely release songs that do not have any political undertones in support of the Russian government.

6 Project Limitations and Next Steps

6.1 Issues with Spotify API

There are number of project limitations that should be considered when reviewing this data. First, the Spotify API posed many of challenges and roadblocks when it came to accessing certain types of data. When initially setting out to do this project, I intended to track the popularity of Russian and Ukrainian artists on Spotify over the course of the first six months following the Russian invasion of Ukraine. However, after many attempts, and developing an over familiarity with all of the functions within the Spotify R package (Charlie Thompson and Wolff 2022), it became apparent that it is not possible to access either an artist's popularity rating, followers number, or monthly listeners number over the course of a specific period of

time without the use of a Third-Party software. Had I been successful in this, it would have been interesting to see how and if the popularity of various artists changed over the course of the war, particularly as people continued to make everyday, conscious choices in boycotting products and artists associated with Russia.

Moreover, there is also a function with Spotify R that allows developers to see the popularity of an artist within certain Spotify markets. However, this data was difficult to access, as it kept showing the same popularity variable despite changing country markets. After a lot of trial and error, this paper was able to get a few key variables about artists that gave enough insight into their audience engagement, but future work in this could seek to review more deeply the question of Russian and Ukrainian musical popularity over time and analyzing differences within various key markets.

6.2 Impact of Personal Biases on Research

In addition, my own personal biases may have played a role in the decision-making process, particularly as it relates to reviewing the artist's political affiliations. As mentioned above, the criteria for deciding whether or not an artist was supportive of the Putin regime was based on a review of several factors. First, I analyzed their social media pages (namely Facebook, VKontakte, and Instagram) to see if they posted any statements online about their stance on Russia's invasion of Ukraine or the Putin regime more broadly. If an artist did not have any statements or other symbols of solidarity to Ukraine, such as a song, I assumed that they were pro-Kremlin, or at the very best, unwilling to use their online platforms to speak out against the regime.

Another factor that I incorporated in this decision-making process was seeing if they had any concerts happening in Russia or if they were performing internationally. This serves as a very telling indicator because for the most part, only artists who are pro-Putin (or at least silently complicit) are still able to perform within Russia without being banned by authorities. While I cross referenced various indicators of political affiliation, there is inevitable a lot of room for error and for personal biases to play a role in the process.

6.3 Censorship in Russia and State Repression

This approach to analyzing an artist's political views also does not take into account the real-life implications of anti-Kremlin public stances. As is well-documented, saying openly critical things of the Russian government poses many personal risks to all people living within Russia, especially musicians with large followings. In the case of these artists, to speak out against the Kremlin would mean that they would likely be threatened by local authorities, deemed as "foreign agents" and eventually be forced out of the country.

Moreover, Russia's censorship agency, the Roskomnadzor, actively works to censor and ban music produced by oppositionist figures. Since a vast majority of these artists' listeners tend

to be Russian speakers, to speak against the Kremlin may also mean a large loss of revenue. The censorship aspect could also play an important role in anti-Kremlin artist popularity, as they might not be as easily available in Russia, which is their largest audience in many cases. As such, the binary definition of being pro- or anti-Kremlin does not take into account the many dangers that come along with activism and being openly supportive of Ukraine. Future work may include a spectrum of anti-Kremlin activity, and classify artists in a more nuanced way.

6.4 Spotify Ban in Russia

Another important point to note is that Spotify has been banned in Russia and the company has stopped all of its operations within the country in March 2022. While it is difficult to know how many people within Russia are using VPNs to circumvent government bans and access Spotify, this paper does not address how and if the ban has impacted Russian artist popularity and following since the start of the war. The Spotify API does not allow developers to access demographic data of a certain artist's listeners, so it was not possible to know how many users were accessing their music through Spotify.

Demographic data from Spotify, even just the countries of users, would have provided invaluable insights about how many Russian citizens were still accessing Spotify after the ban, as well as which countries around the world have the most users actively listening to both pro- and anti-Kremlin artists.

6.5 Next Steps

There are many possible avenues that could be further explored in this topic. Most notably, the temporal aspect of the data would be very valuable in showing how, regardless of an artist's political affiliations, the war has impacted an artist's popularity and following over the course of several months, particularly as bans and boycotts from both sides continue to quell the flow of information and music. Another potential project could take a textual analysis of lyrics from songs that are known to have strong political undertones, and compare their popularity rating and what sorts of songs are recommended based on these lyrics.

In addition, looking at the various markets that engage with Russian artists could offer important insights into the reach of these artists and where they be getting higher followings, which could then be tied more broadly to a given country's vulnerability to pro-Kremlin narratives.

7 Conclusion

In using Spotify's API for R, this project set out to understand how Russian artists were being engaged with by users and their audiences through this platform, and how the Spotify recommendation algorithm was opting to recommend artists despite their politics. The findings can be summarized by two main ideas: One, that politics do not seem to play a huge role in the popularity of either pro- or anti-Kremlin artists, and; two, the Spotify API was mainly recommending artists that were supportive or complicit with the Putin regime, but did not have overtly political stances in their music. While this report only looked at eight of the many musicians operating in the Russian-speaking world, these artists are among the most vocal in their political views and well-known within these audiences.

This research project could be tied to broader topics related to the proliferation of Russian disinformation around the world, offering a look into the impact and permeation of pro-Kremlin narratives, and how they translate into individual's musical preferences and choices. Looking at "soft social media" platforms like Spotify, in stark contrast to Twitter or Facebook, gives us a glimpse into the casual media consumption habits of Russian-speaking audiences, including how the artists they choose to engage with may impact their own political views and beliefs. It also sheds light into how the global movement to boycott Russian artists, particularly pro-Putin ones, is impacting these artists' online engagement and presence.

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