From Courtrooms to Charts: The Impact of Kavanaugh's Appointment on Music Consumption

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Context: Political Consumerism

In recent years, there has been an increase in **political consumerism**, a phenomenon where **consumers "vote" with their wallets**.

Companies followed by taking stances on political and social matters. (Stolle and Micheletti, 2013)

For example, Nike and Pepsi have produced ad campaigns inspired by the Black Lives Matter movement. (Liaukonytė, Tuchman, and Zhu, 2023)

Context: Political Consumerism

Political consumerism became evident in the movie industry following the **Weinstein scandal** and the **#MeToo movement** in 2017 (Luo and Zhang, 2022).

- **#MeToo** boosts Hollywood producer-female writer collaborations.
- Weinstein-associated producers were **35% more likely** to work with post-scandal **female writers**, especially those closely connected to him.

In the music industry, it is usually the **Artist** that takes a stance on **political and social issues**.

This Paper

Research question

Did Kavanaugh's appointment affect music consumption in the US?

As **setting** we chose:

- **Kavanaugh's Appointment** at Supreme Court - #MeToo
- Platform: **Spotify**

Main Results:

- Female artists' **streams increase** *w.r.t.* males' and groups' ones
- The effect is **short-term** - 3 Months

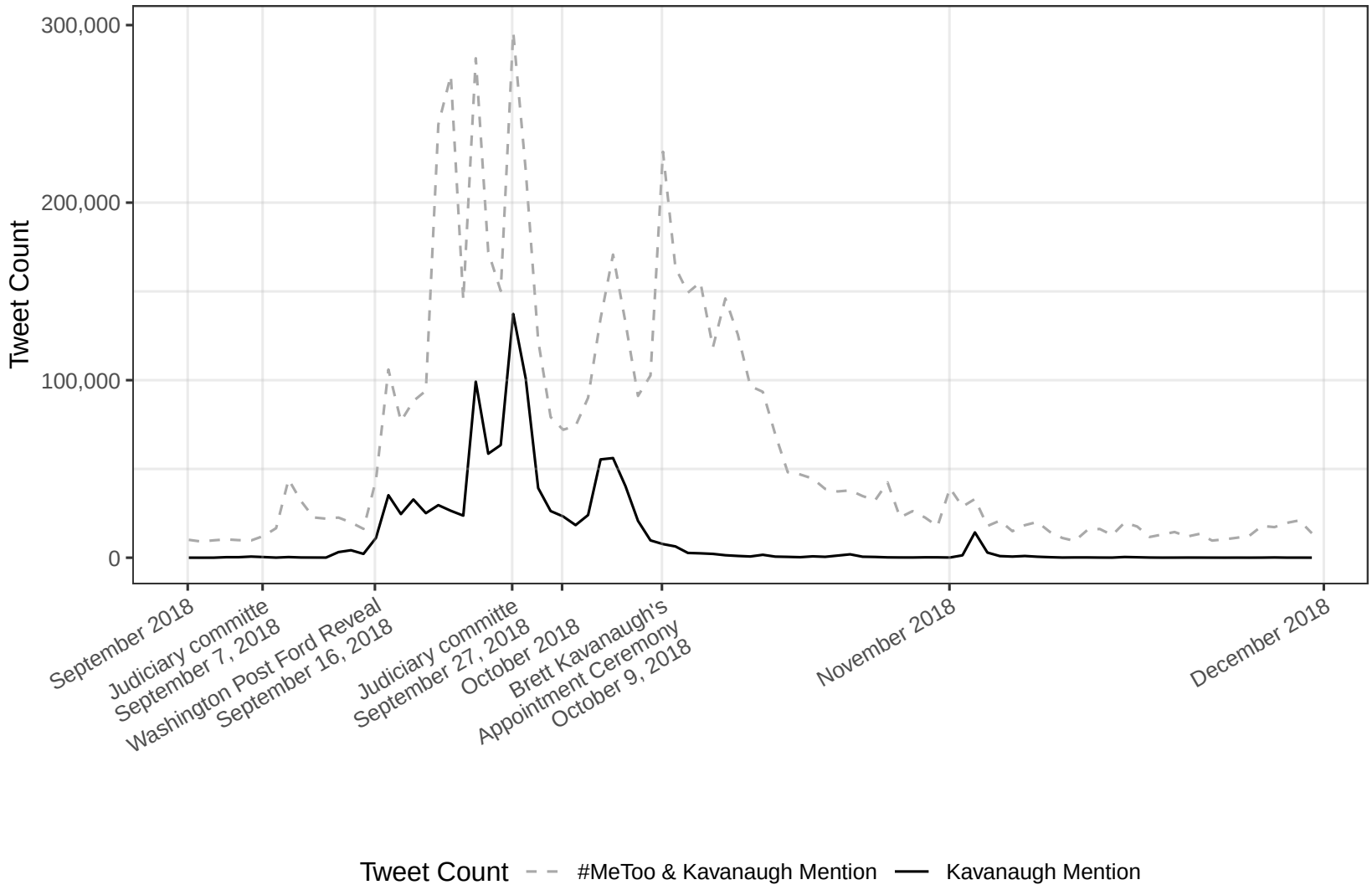
Who is Brett Kavanaugh?

- **Brett Kavanaugh** is a federal judge nominated to the US Supreme Court by President Donald Trump on **6th October 2018**.
- Considered a **conservative** judge.
- Accused of sexual assault by **Christine Ford**, who testified before the Senate Judiciary Committee.
- His appointment gave the Supreme Court a **solid conservative majority**.

Kavanaugh's Appointment media coverage

- In the **tweets text analysis** we have among the most common hashtags, #stopkavanaugh and #kavanaugh ▸ Tweets Hashtags
- #MeToo, had a significant increase in tweets in **September 2018**, returning to **previous levels in two months**.
- As a **proxy for general interest**, we use Tweets count about #MeToo and #stopkavanaugh and #kavanaugh

#MeToo and Kavanaugh tweets



Data

Spotify:

1. Charts: **200 most streamed songs** in the **US** on **Spotify**
    - Number of streams
    - Song rank (1-200)
    - Days on chart
    - Release week (0 -1)
    - Release date
2. Song Features elaborated by Spotify:
    - Danceability, Tempo (bpm), Energy, Key, Duration (length), etc.
3. Artists data:
    - Gender: Female, Male, Group *(musicbrainz.com)*
    - Followers

▸ Descriptive statistics ▸ Gender Share Over Time

The Model

Difference-in-Difference Specification:

$$\log(\text{streams}_{it}) = \theta_i + \gamma_t + \beta_1 \text{Female}_i \times \text{Post}_t + \beta_2 \boldsymbol{\chi_{it}} + \epsilon_{it}$$

Where:

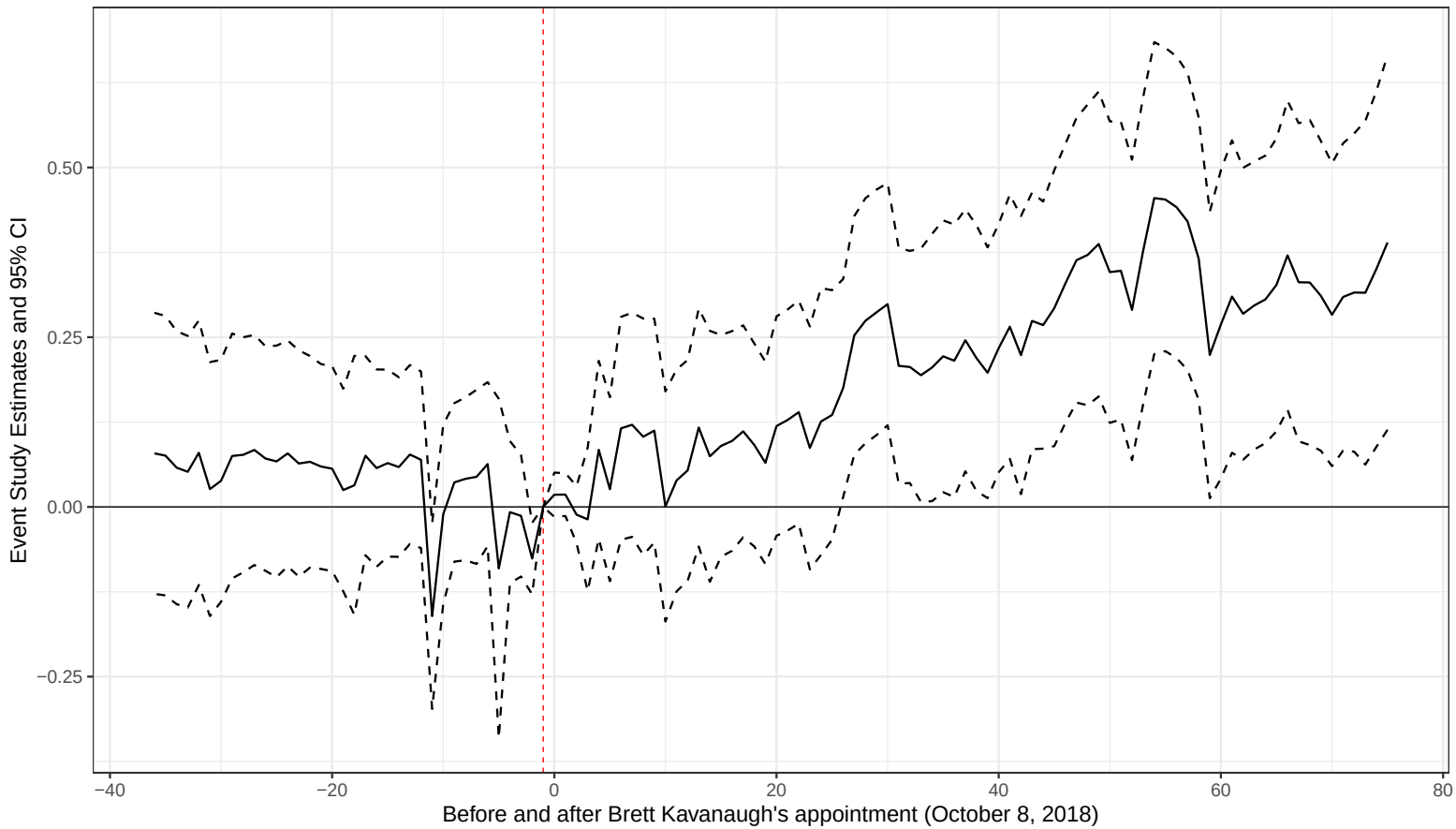
i is the item observation at **song** level

t is the time observation at **day** level

- The coefficient β_1 **captures the difference** between the log of the streams of **songs performed by male or female artists**.

The event study was conducted using observations from the **first Monday of September** to the **last Sunday before Christmas in December 2018**.

Event Study: Female and Male artists



Regression Table: Female and Male artists

	$\log(\text{streams}_{it})$		
	(1)	(2)	(3)
Release Week	0.303***		0.407***
	(0.073)		(0.039)
$Post_t \times Female_i$	0.289***	0.176**	0.161**
	(0.066)	(0.071)	(0.072)
Artist fixed effects	✓		
Day fixed effects	✓	✓	✓
Song fixed effects		✓	✓
Song features controls	✓		
Charts controls			✓
Observations	16,223	16,223	16,223
R^2	0.44098	0.80075	0.82835
Within R^2	0.13400	0.00845	0.14582

Event Study: Placebo

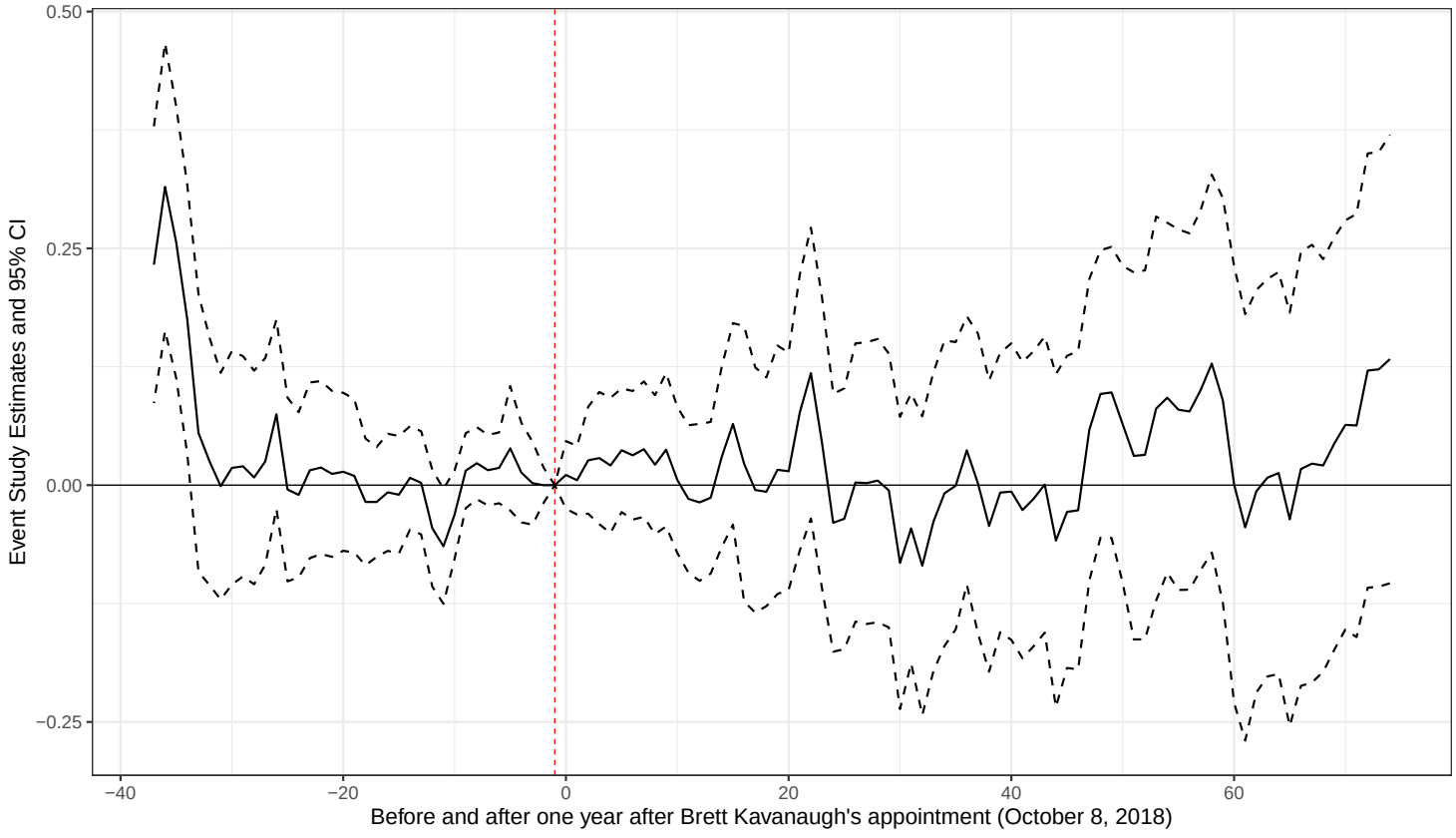


Figure: Event Study using 2019 as Placebo

Coefficient plot per year: $Post_t \times Female_i$

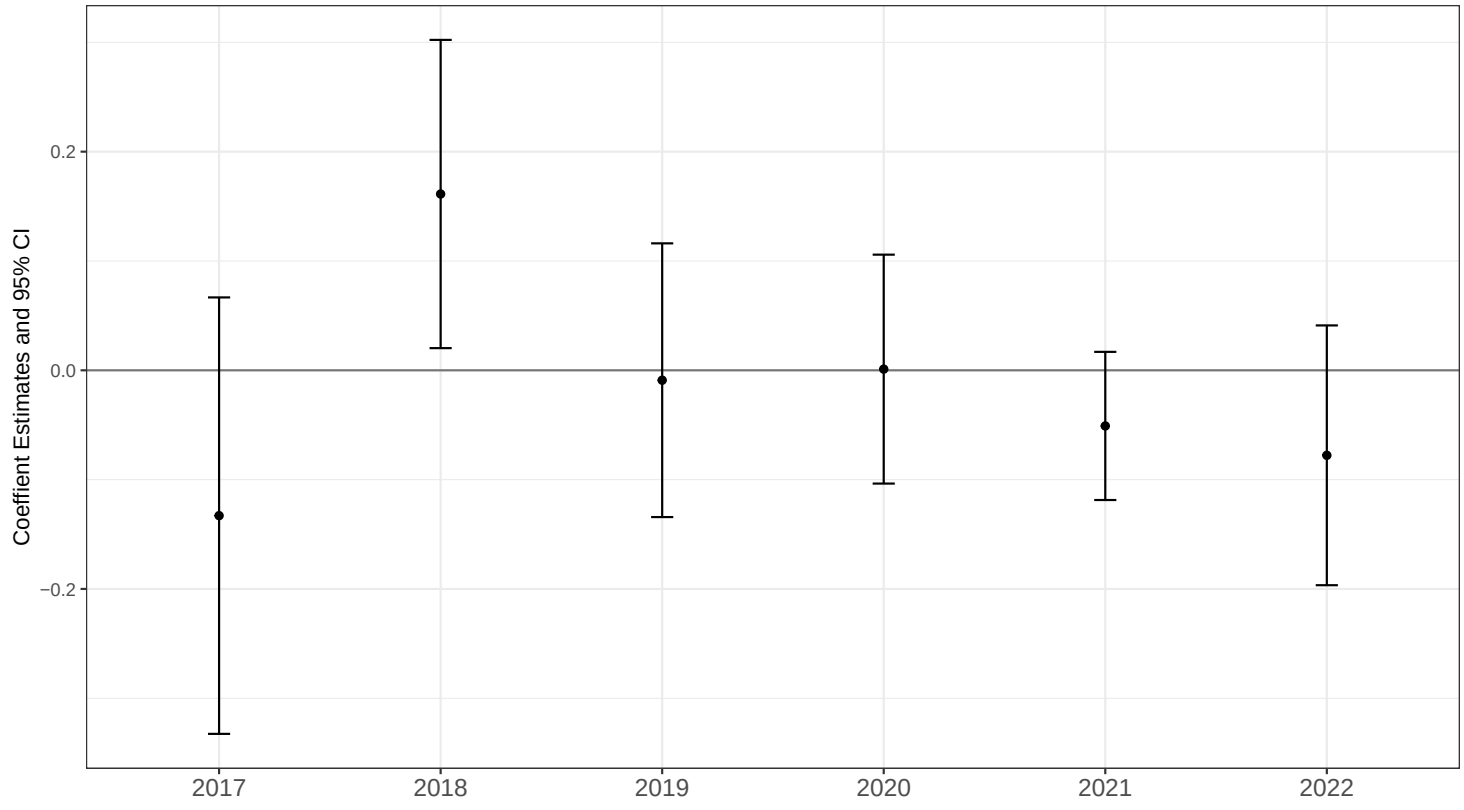


Figure: Annual Regression $Post_t \times Female_i$ Estimates in the US

Coefficient plot per country: $Post_t \times Female_i$

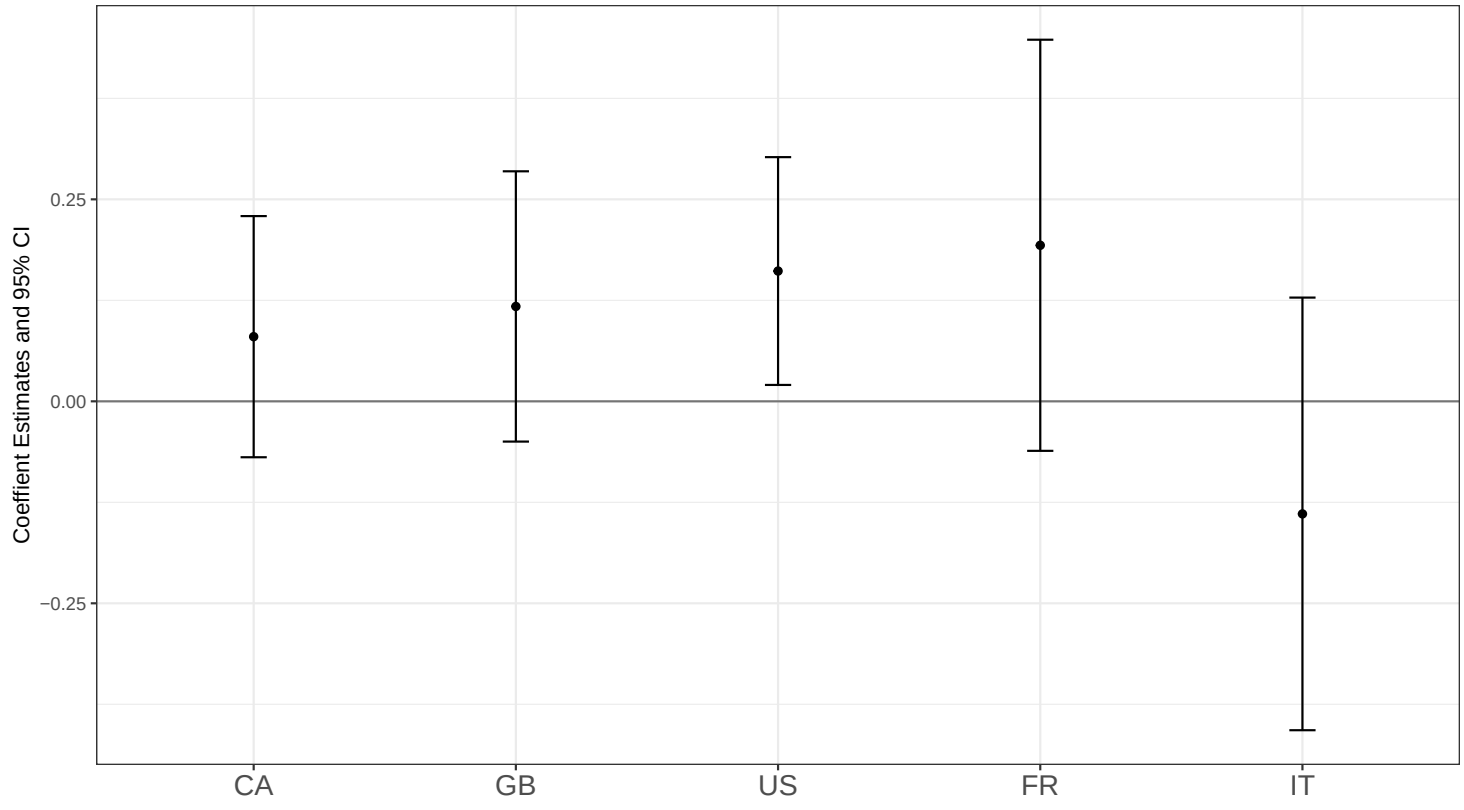


Figure: $Post_t \times Female_i$ Estimates Across Countries in 2018

Gender share in Playlists

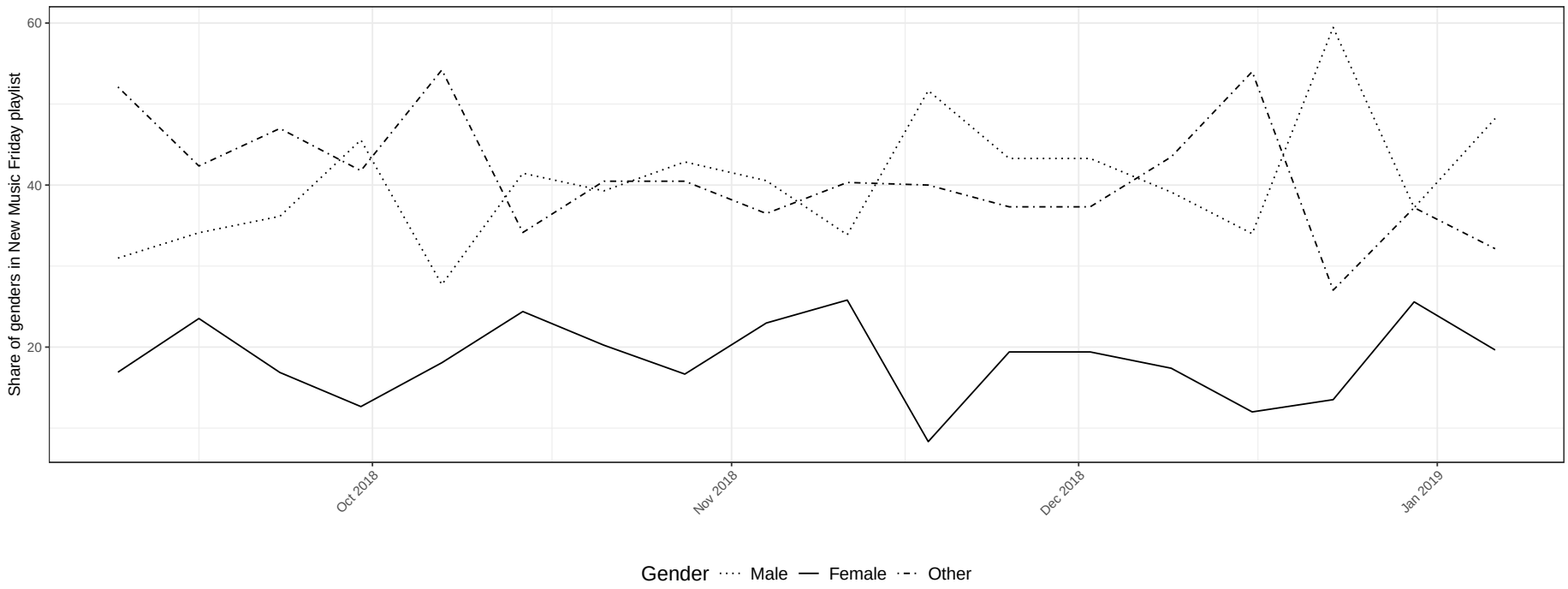


Figure: Share of songs among single artists in the New Music Friday Playlist, per gender

Why females vs males?

Kavanaugh's nomination thus marked a **turning point in the discourse on sexual misconduct**, with significant implications for gender politics in the United States. (Lawless, 2018)

We **analyzed the lyrics of the songs** in the charts for:

1. **Sexism**: BERTModel to identify **sexist verses**
2. **Female Empowerment**: LLM (LLAMA3 from Meta) to identify whether a song is an **empowerment** song or not

Examples: Female empowerment and sexism from females

I'M THAT GIRL

Beyoncé - RENAISSANCE

Lyrics

I pull up in these clothes, look so good
'Cause I'm in that, hoe
You know all these songs sound good
'Cause I'm on that, hoe
Deadass, deadass, I'm deadass
It's not the diamonds
It's not the pearls
I'm that girl (I'm that girl)

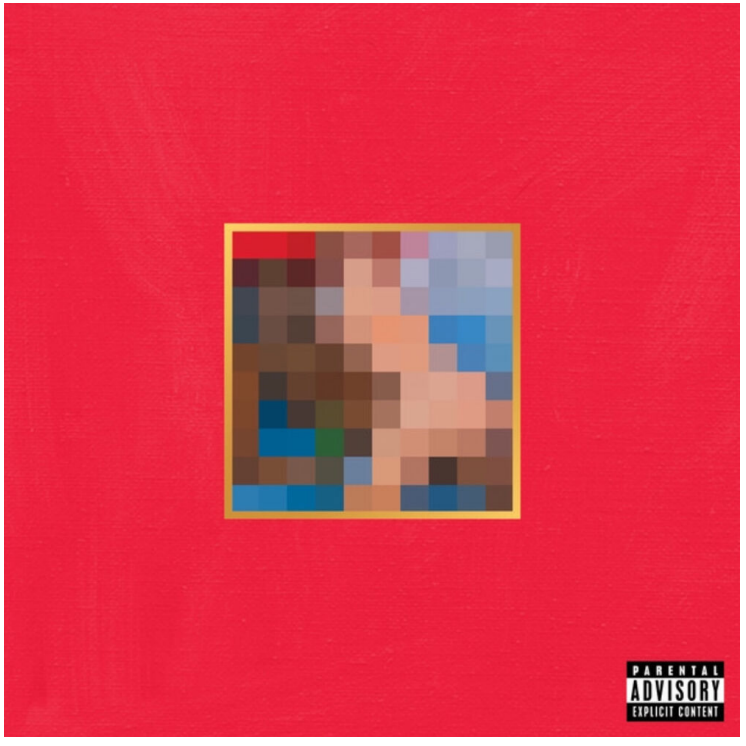
Examples: Female empowerment and sexism from males

ALL OF THE LIGHTS

Kanye West - My Beautiful Dark Twisted Fantasy

Lyrics

Restraining order, can't see my daughter
I made mistakes
I bumped my head
Them courts sucked me dry
I spent that bread
She need her daddy, baby, please



Lyrics: Sexism

	$\log(\text{streams}_{it})$		
	(1)	(2)	(3)
$Post_t \times Sexist_i$	0.376***	-0.023	-0.025
	(0.118)	(0.048)	(0.048)
$Post_t \times Female_i$			0.088
			(0.063)
$Post_t \times Female_i \times Sexist_i$			0.399***
			(0.138)
Song fixed effects	✓	✓	✓
Day fixed effects	✓	✓	✓
Observations	2,102	14,081	16,183
R^2	0.85308	0.83120	0.82975
Within R^2	0.06105	0.16588	0.15082

Lyrics: Empowerment

	$\log(\text{streams}_{it})$		
	(1)	(2)	(3)
$Post_t \times Empowering_i$	0.166*	-0.142	-0.136
	(0.083)	(0.125)	(0.125)
$Post_t \times Female_i$			0.136**
			(0.069)
$Post_t \times Female_i \times Empowering_i$			0.298*
			(0.162)
Song fixed effects	✓	✓	✓
Day fixed effects	✓	✓	✓
Observations	2,102	13,970	16,072
R^2	0.84733	0.83108	0.82875
Within R^2	0.02430	0.16711	0.14760

Lyrics: Label

	$\log(\text{streams}_{it})$
	(1)
$Post_t \times Female_i \times Universal_i$	-0.426***
	(0.115)
$Post_t \times Female_i \times Warner_i$	-0.340**
	(0.136)
$Post_t \times Female_i$	0.491***
	(0.107)
Song fixed effects	✓
Day fixed effects	✓
Observations	15,869
R^2	0.83136
Within R^2	0.17360

Key Takeaways

- The media attention on **Kavanaugh's Appointment** and on the **#MeToo movement** had an effect on music consumption in the United States in the following **70 days**.
- **Increase** of approximately **16%** in the consumption of music performed by **women**, compared to music performed by **men and groups**.
- Sexist songs from women **increase** of approximately **40%** w.r.t non-sexist songs.
- Songs that are **flagged as empowering** by LLAMA3, have a fairly significant increase of **30%** w.r.t non empowering songs.

Thank you !! ☺

Appendix

Tweets

Most common hashtags in tweets in the selected period:

1. #metoo: 2 857 575
2. no hashtag: 2 458 176
3. #believesurvivors: 339 692
4. #whyididntreport: 293 834
5. #timesup: 176 026
6. #believewomen: 116 173
7. #stopkavanaugh: 114 948
8. KoreanTweets: 90 688
9. #kavanaugh: 86 591
10. #himtoo: 86 410

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Descriptive statistics

Summary Statistics - Songs by Female and Male Artists between September 3, 2018, and December 23, 2018

	Female		Male		Difference	
	Mean	SD	Mean	SD	Δ	P-value
Charts						
Days on Chart	79	76	161	177	-82	0.00
Chart Rank	100	58	98	58	3	0.04
Week of Release	0.04	0.19	0.13	0.33	-0.09	0.00
Streams	451 302.76	387 632.69	440 398.19	289 589.79	10 904.57	0.22
Artists						
Artist Followers	51 983 414	40 881 990	24 723 157	26 021 992	27 260 257	0.00
Song Characteristics						
Song Duration (Seconds)	203	27	194	51	9	0.00
Is Explicit	0.32	0.47	0.81	0.39	-0.49	0.00
Major Record Label	0.72	0.45	0.51	0.5	0.21	0.00
Is Empowering	0.09	0.29	0.02	0.15	0.07	0.00
Is Sexist	0.18	0.38	0.61	0.49	-0.44	0.00
Is Single Release	0.56	0.5	0.2	0.4	0.36	0.00
Song Features						
Acousticness	0.3	0.3	0.24	0.25	0.06	0.00
Danceability	0.62	0.13	0.73	0.14	-0.11	0.00
Energy	0.59	0.17	0.59	0.15	0	0.90
Tempo (BPM)	119.68	27.86	125.69	29.18	-6	0.00
Number of observations:	2120		14103			

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Gender share in charts

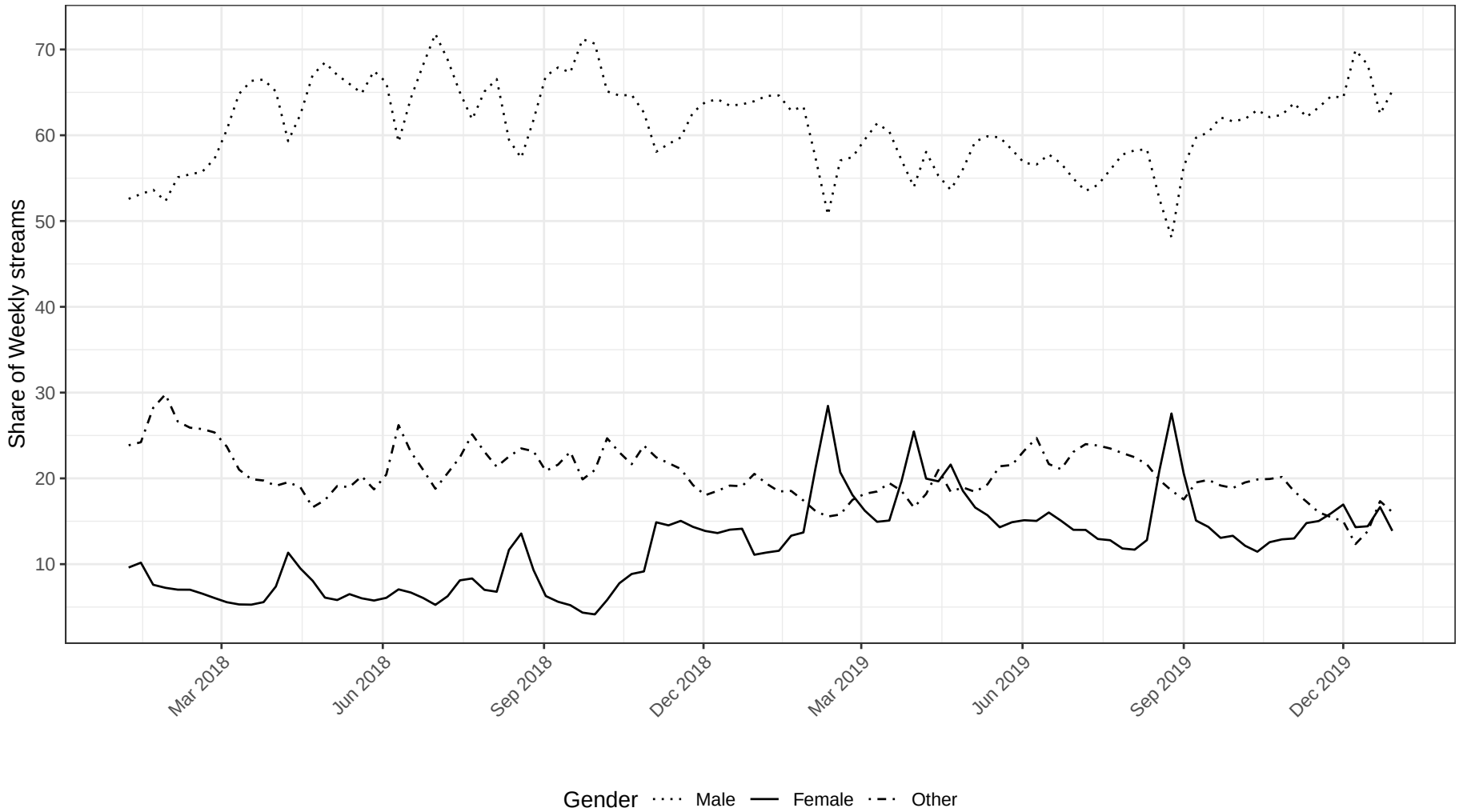

Figure: Share of daily streams among single artists, per gender

Literature review

Under-representation of female artists in the music industry:

- Smith et al., 2018 Report analyzing the presence in charts and prizes won by women
- D'Souza, 2023 article reporting the women's underepresentation in the music industry.
- Kelley, 2019 article pointing out gender inequality in music industry
- Bossi, 2020 article analyzing the underlying factors for gender inequality.

Gender-bias in the movie industry:

- Ellis-Petersen, 2014 Hollywood film crews 75|25 as Male|Female Ratio.

Bias in recommendation systems:

- Aguiar, J. Waldfogel, and S. Waldfogel, 2021 Spotify favours women's songs in the positions of New Music Friday playlists.

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Smith, Stacy et al. (2018). *Inclusion in the Recording Studio? Gender and Race/Ethnicity of Artists, Songwriters & Producers across 600 Popular Songs from 2012-2017*. Tech. Rep. USC Annenberg School for Communication and Journalism.

Stolle, Dietlind and Michele Micheletti (Oct. 2013). *Political Consumerism — Global Responsibility in Action*. ISBN: 9781107567290. DOI: 10.1017/CBO9780511844553.