

MAPPING THE RISE: Success of Female Rappers by City

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Why This Matters

- The success of rap tracks often depends on geography.
- Female rappers are more visible than ever, yet still underrepresented in charts, playlists, and industry spaces.
- This project explores the link between city of origin and streaming success for female rap artists.



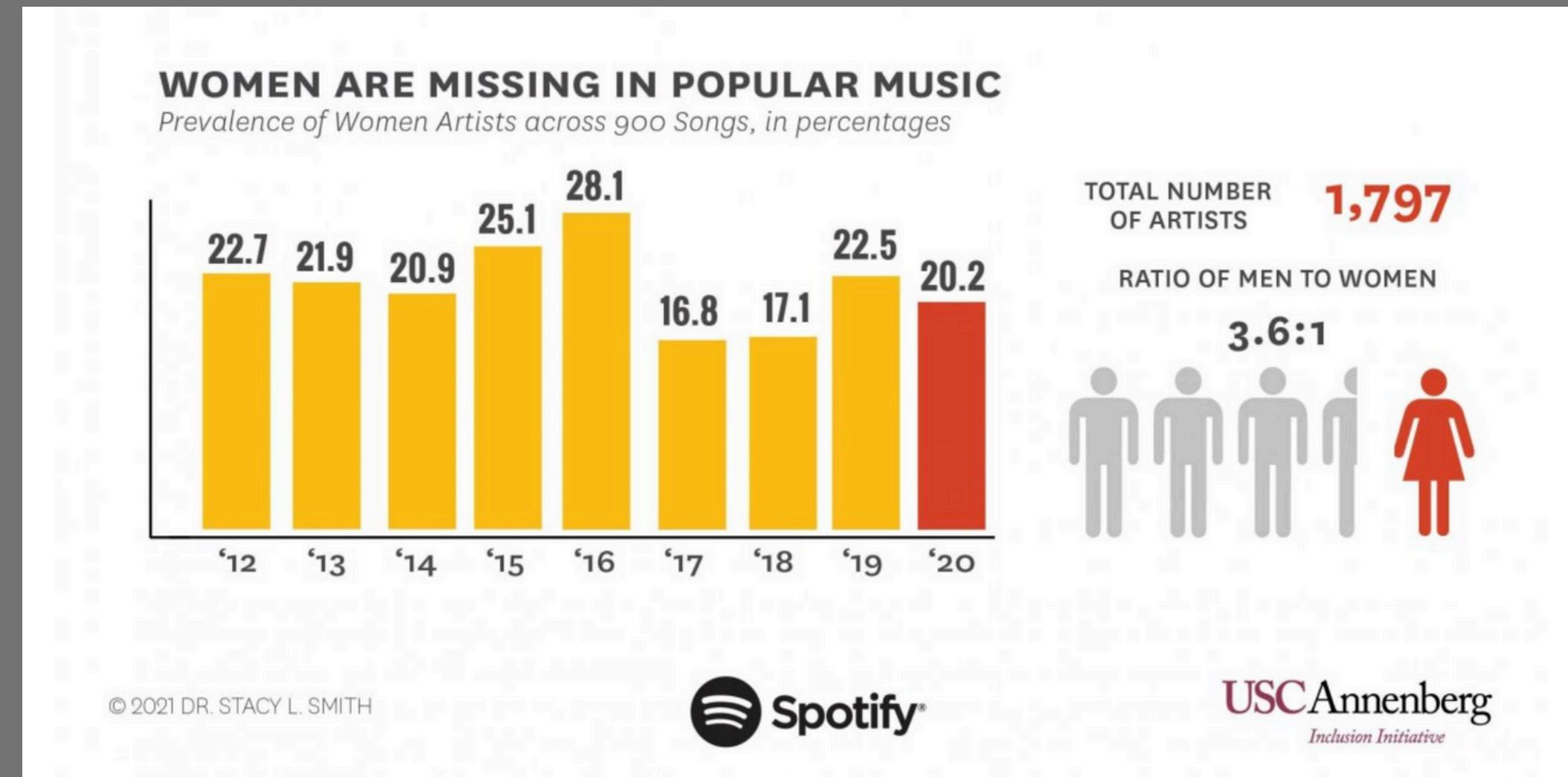
[NICKI MINAJ](#) 

@NICKIMINAJ

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In any field, women must work TWICE as hard to even get HALF the respect her male counterparts get. When does this stop?

Industry Context



- Female rappers face persistent gender disparities in a male-dominated industry.
- Women made up only 23.3% of Billboard Hot 100 artists in 2021.
- Successful figures like Nicki Minaj are exceptions.

Research Questions



Which U.S. cities produce the most successful female rappers?



How are female rappers represented across streaming and chart platforms?



Can we predict which artists are likely to succeed based on city and platform data?

Datasets Used



Spotify®

Top Hip Hop Artists & Tracks



Spotify®

Top 10K Streamed Songs



Female Rappers Playlist

billboard

Hot 100 Songs

COMPLEX

Best Rap Cities

Methodology: Data Cleaning

- Manually reviewed and tagged artists by gender and city of origin.
- Normalized location data (e.g., grouped NYC boroughs under “NYC”).
- Filtered out non-rap artists and singers like Beyoncé.

Methodology: Feature Engineering & Modeling

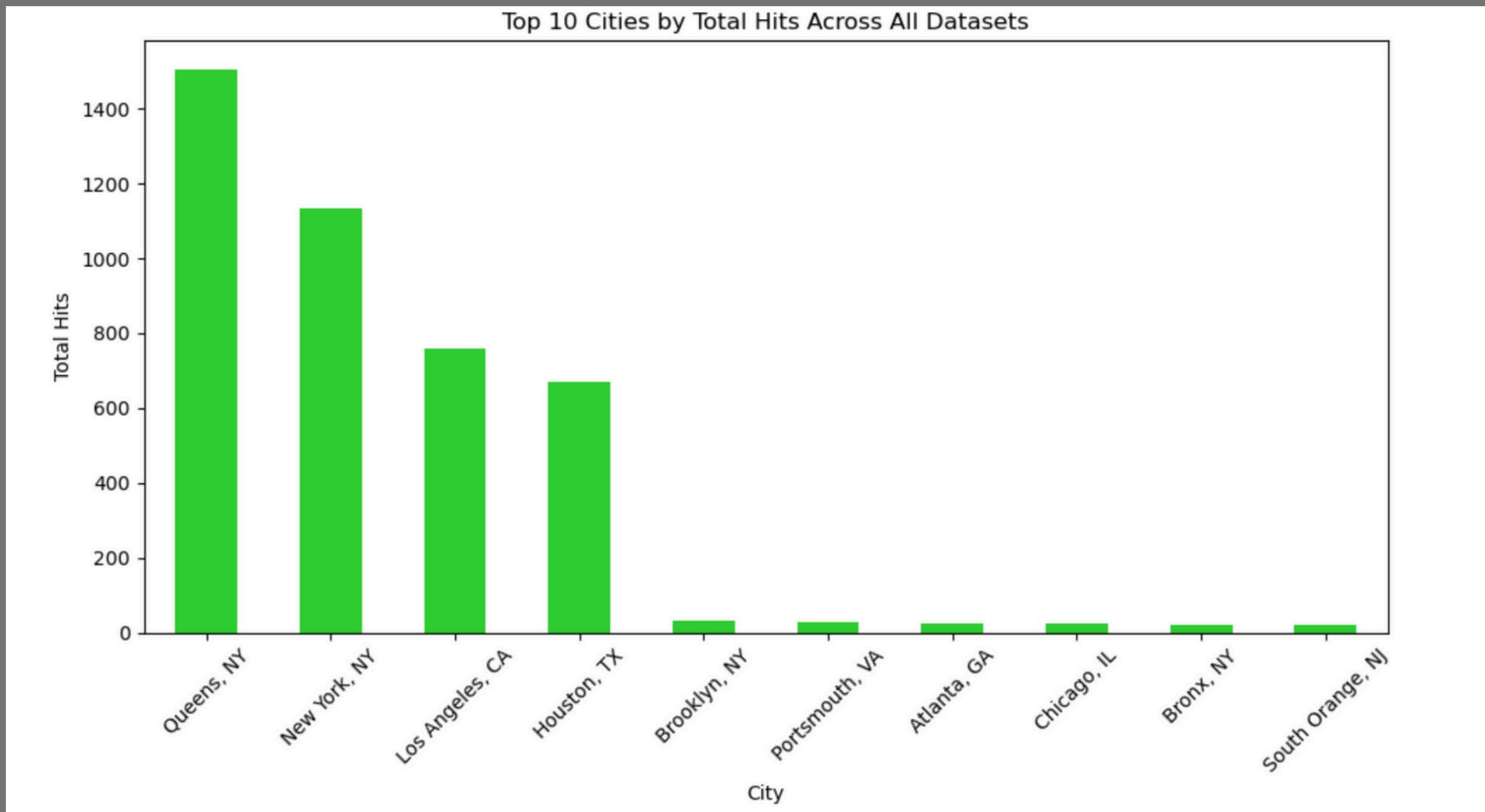
- Created a “mention count” from artist appearances across platforms.
 - Defined hit artists as those with 5+ mentions.
 - Preprocessed data: one-hot encoded cities, scaled numerics, imputed missing values.
 - Trained a Random Forest Classifier to predict hit probability.

Key Findings: New York City Dominates



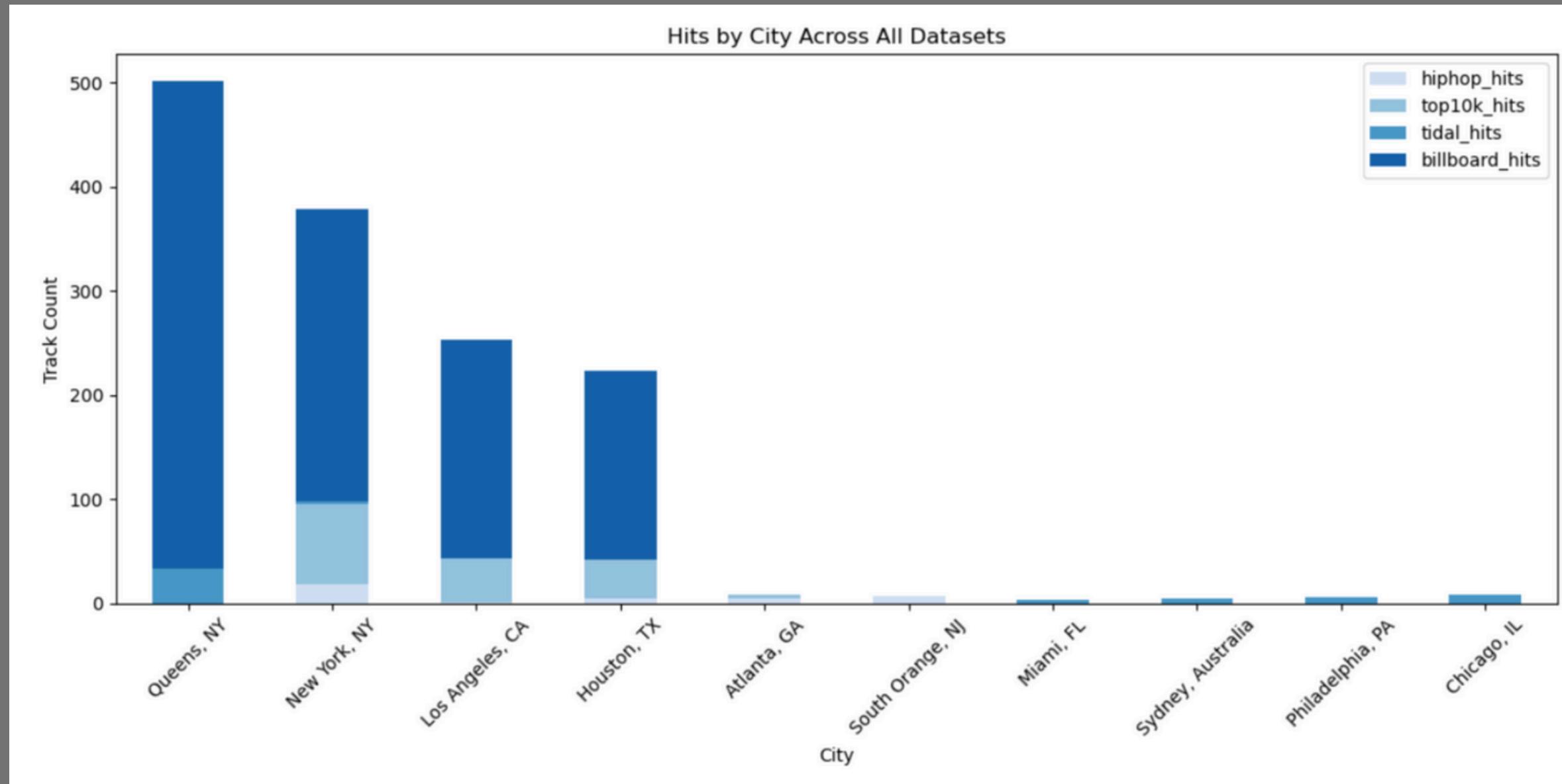
- New York City leads in artist representation and mentions.
- Home to legends like Nicki Minaj and Cardi B.
- Highest cross-platform presence (Spotify, TIDAL, Billboard.)

Houston and LA Dominate Too



These cities provide the **cultural and industrial ecosystems** female rappers need to thrive.

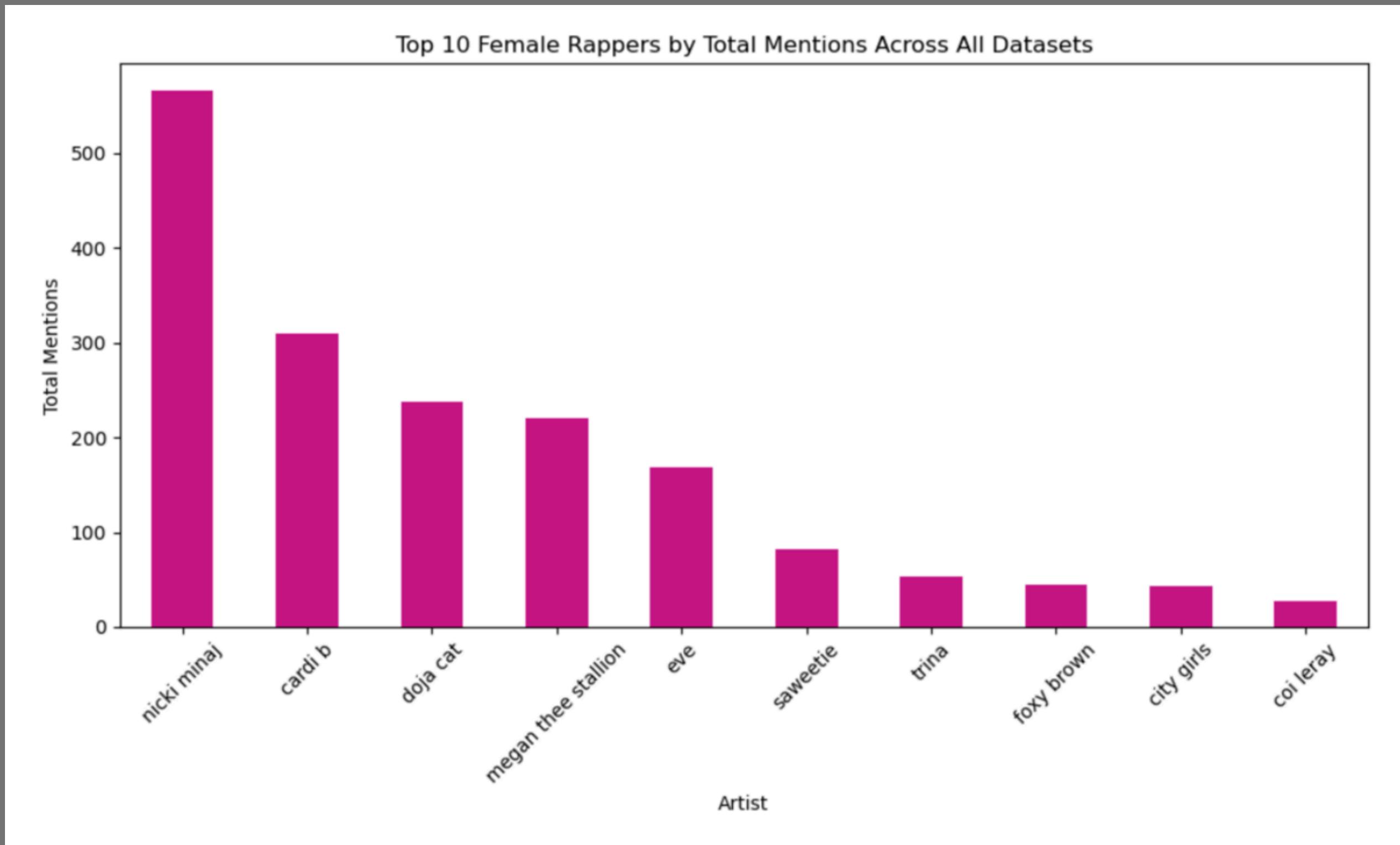
Cross-Platform Dominance



NYC, Houston and LA artists top:

- Spotify playlists (user behavior)
- TIDAL playlist (editorial)
- Billboard charts (commercial success).

Artist Highlights



Artist Highlights



Nicki Minaj: Highest total mentions, cross-generational icon.



Cardi B: Viral success, Grammy winner.

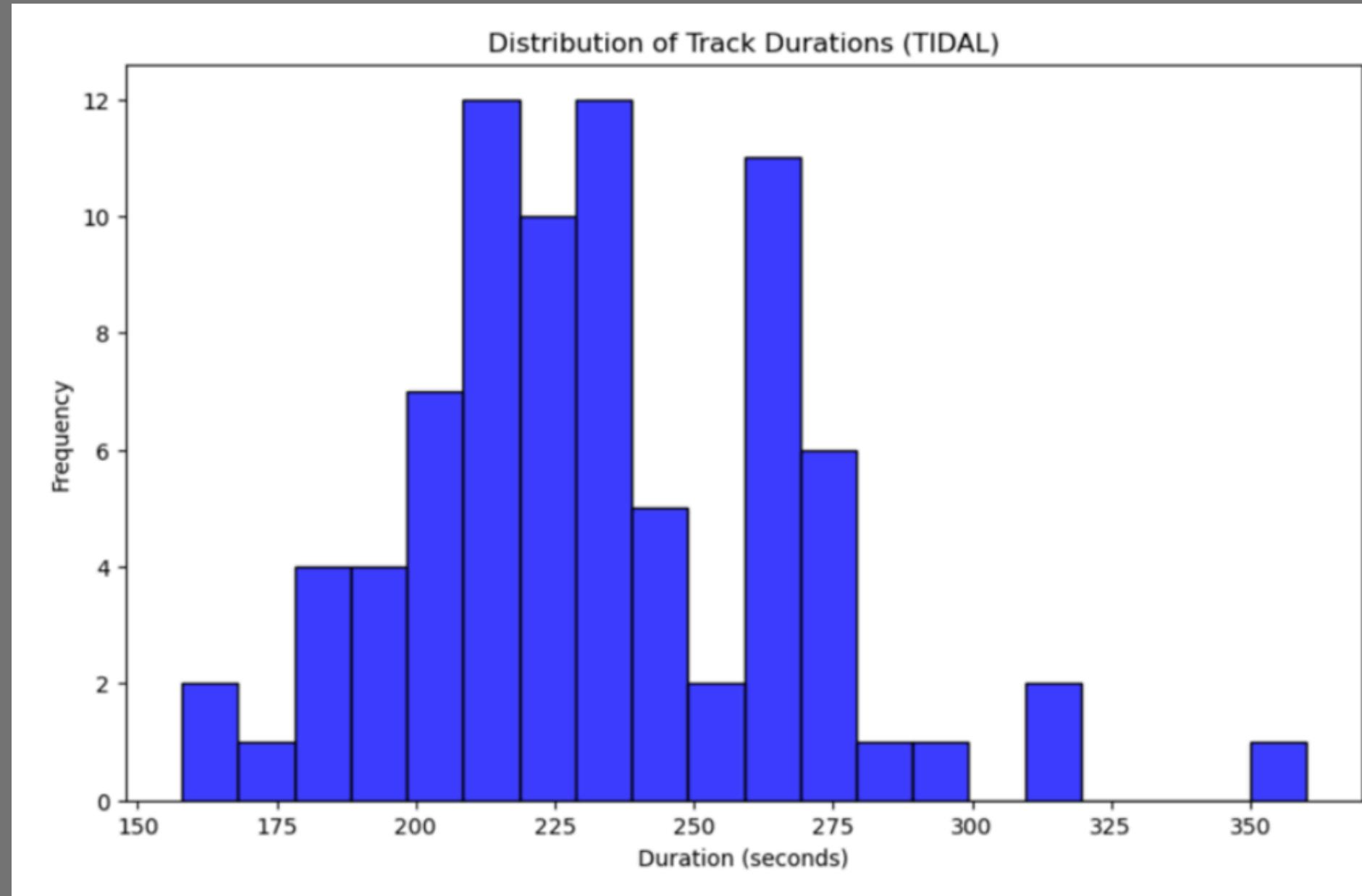


Megan Thee Stallion: Southern flair, Gen Z empowerment.



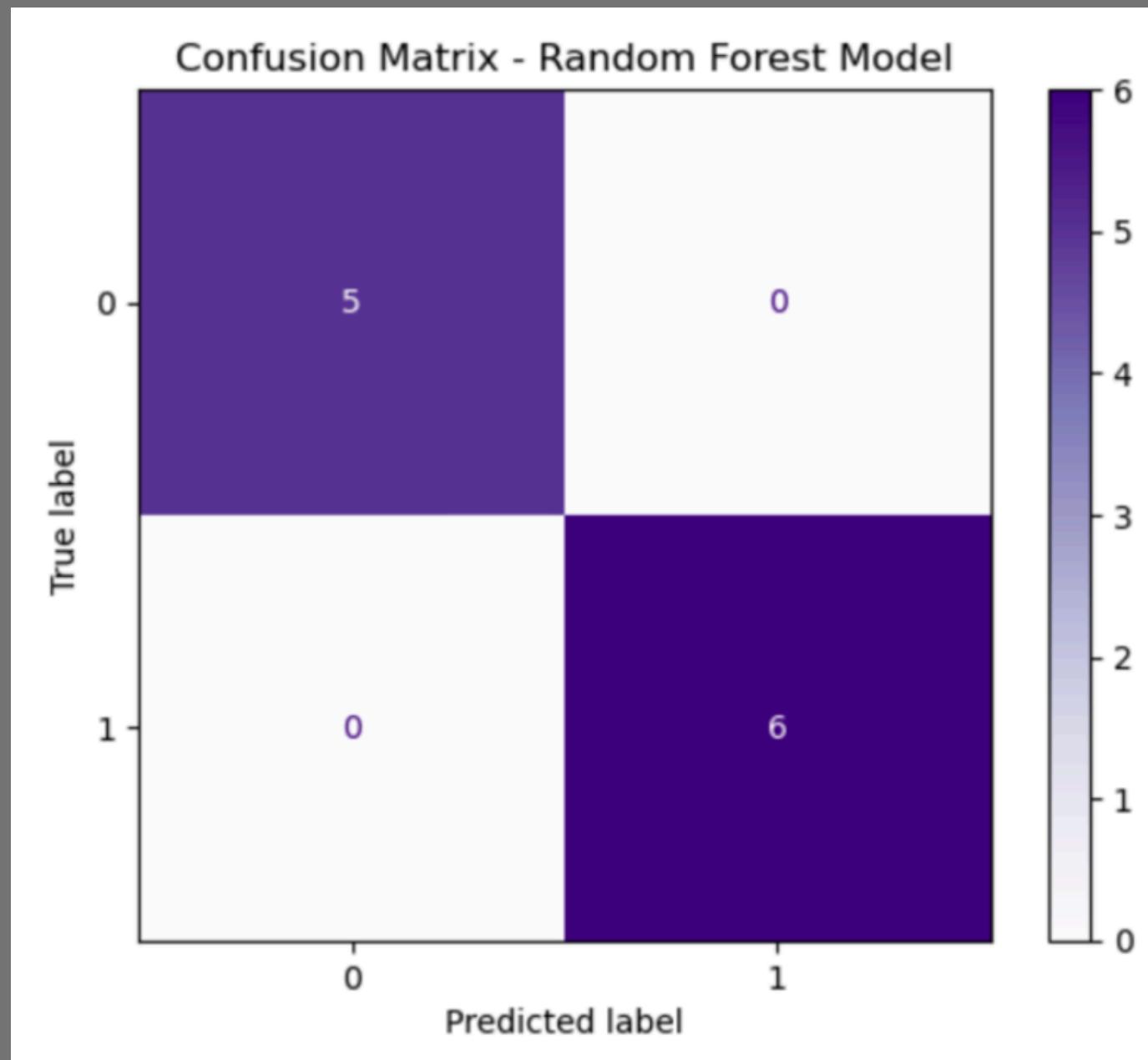
Doja Cat: Internet-savvy, pop/rapcrossover.

Other Findings



- Most successful tracks are **3 to 4.5 mins** (streaming-friendly).
- **Billboard** and **Spotify Top 10k** are strong indicators of future success.
- **TIDAL** and **Complex** better capture early/emerging talent.

Model Performance



- **100% test accuracy** (small test size n=11).
- **88% mean accuracy** via **cross-validation**.
- Requires larger datasets for robustness.

Recommendations

-  Focus **scouting** in **New York City, Houston, Los Angeles and Atlanta**.
-  Track **early momentum** via Spotify Top 10k and Billboard.
-  Use **predictive models** in A&R to identify **high-potential** artists.

Future Work



Add lyrical, audio, and collaboration features.



Expand to global scenes (UK, France, Brazil, South Africa).



Explore TikTok virality and social media signals.



Build a dashboard for label executives to filter artists by city, genre, and hit probability.

THANK YOU!



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Project report: https://github.com/eloiseelle/capstone/blob/41b1b23f8e838fcfd516d93009e6f58c3721ab5d/06_capstone_final_report.pdf