

Gender Identity and Emotional Expression in Popular Music Lyrics

Master's in Data Science Capstone Presentation by Molly Siebecker



MAY 2025

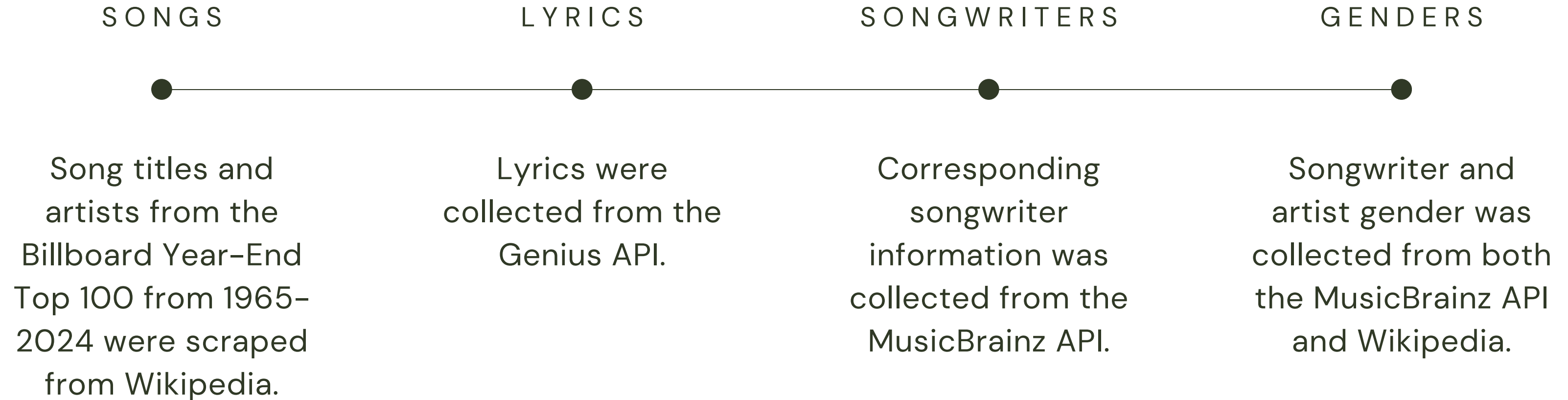
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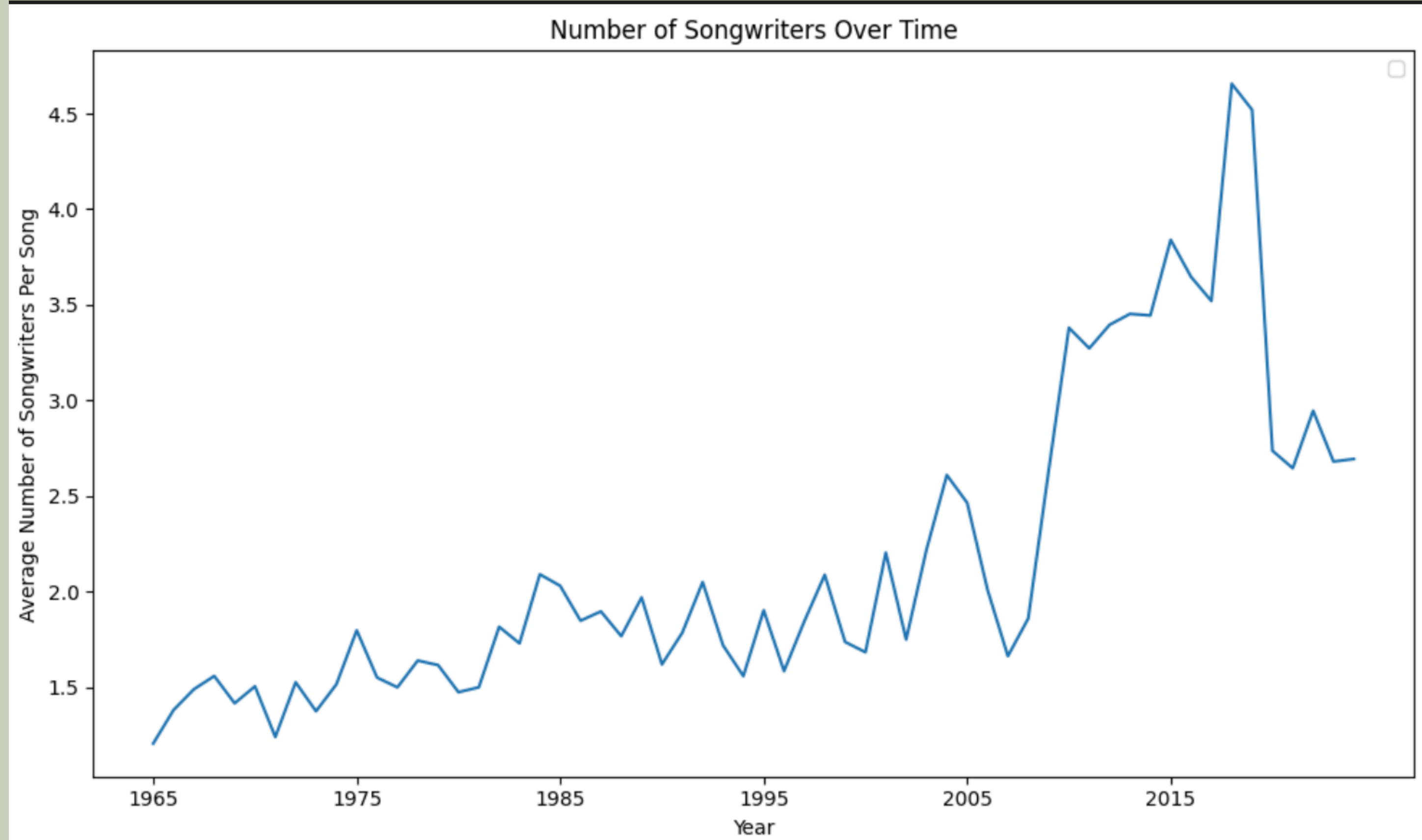
Research Question

Is there an association between the gender identity of a songwriter or musical artist, and the emotional content of the lyrics, as determined by sentiment analysis methods?

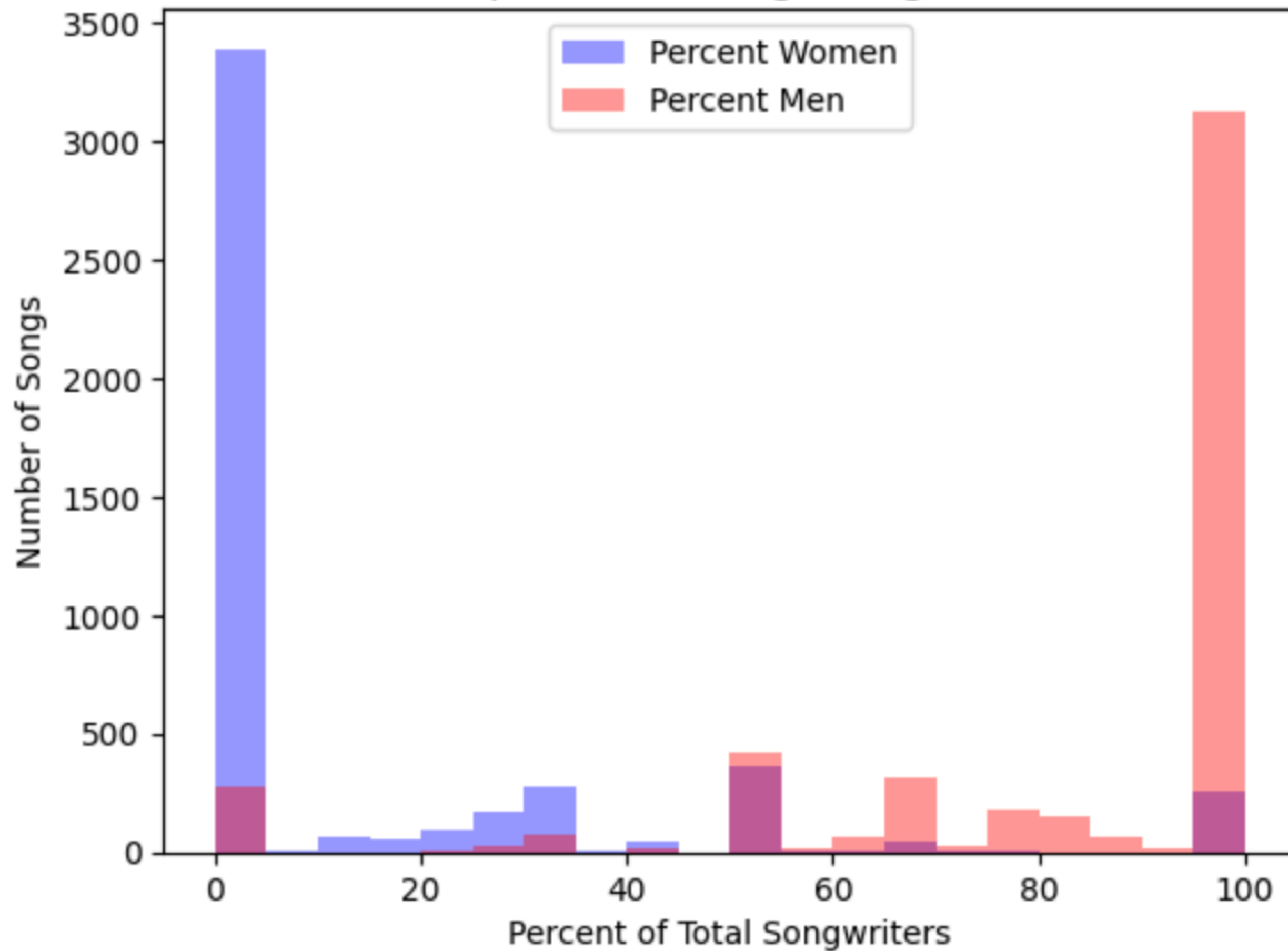
Data Collection Methods



Songwriting has become a team sport



Composition of Songwriting Teams





Sentiment Analysis Classifier

- Hugging Face transformer `bhadresh-savani/distilbert-base-uncased-emotion`
- 6 emotions
- Confidence score
- Additional measure: Rate of emotion laden words (NRC dictionary)

"____"-est Songs

Sadness	Joy	Love	Anger	Fear	Surprise
"Where I Wanna Be" by Donnell Jones	"Gloria" by The Shadows of Knight	"Doctor's Orders" by Carol Douglas	"Rude" by Magic!	"You Must Love Me" by Madonna	"Amazed" by Lonestar
"Oh, how I feel so sad/ Now that I wanna leave"	"I'm gonna shout all night (Gloria)/ Gonna shout it every place (Gloria)"	"It says in my condition/ Love's the best physician/ He's prescribed a potion/ Full of warm emotion"	"Why you gotta be so rude?/ Don't you know I'm human too?"	"Scared to confess what I'm feeling/ Frightened you'll slip away"	"Every little thing that you do/ Baby I'm amazed by you"

Associations between Gender and Primary Emotion

$p \approx 0.03$

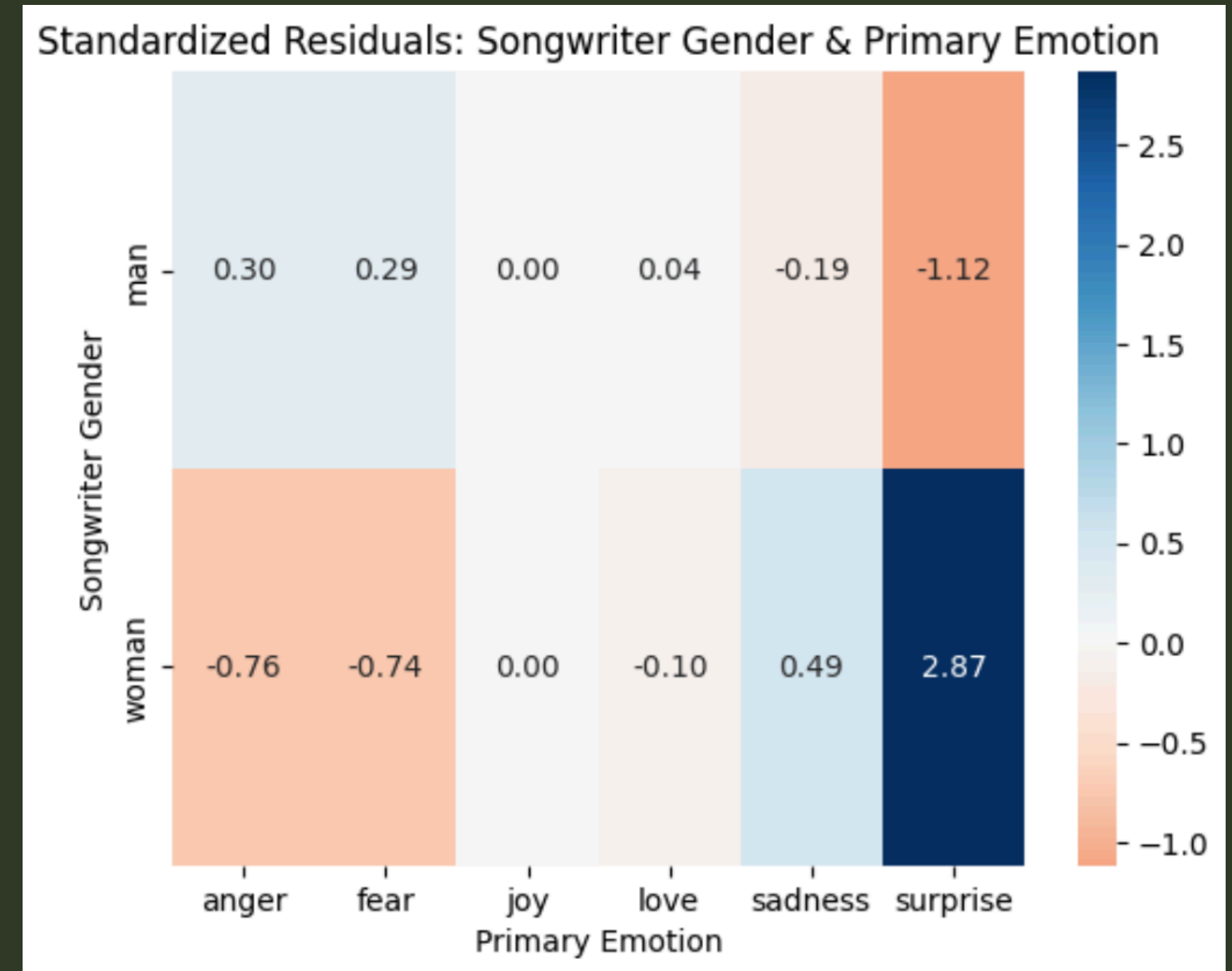
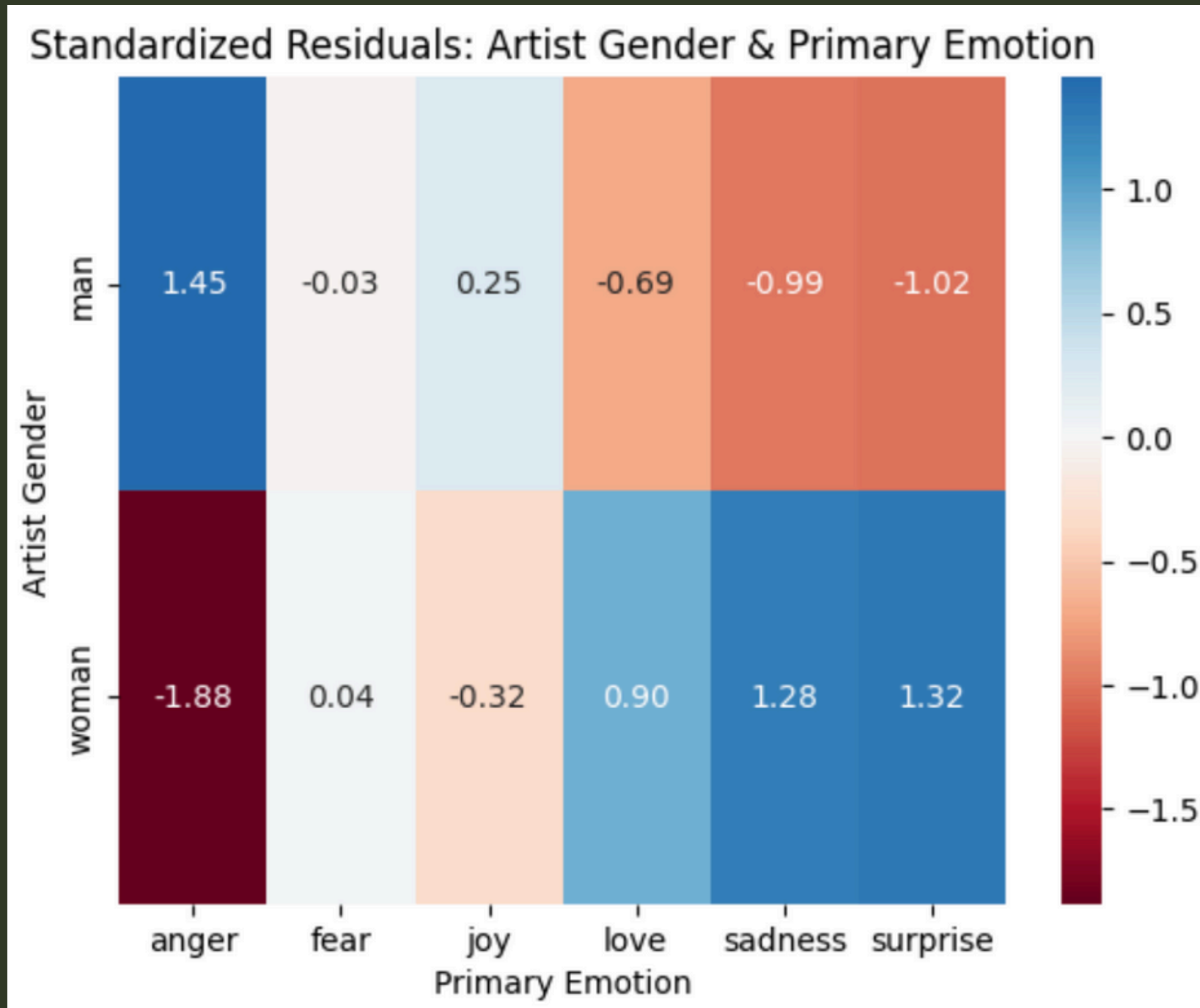
$df=5$

Chi-square statistic ≈ 12.47

$p \approx 0.05$

$df=5$

Chi-square statistic ≈ 11.06

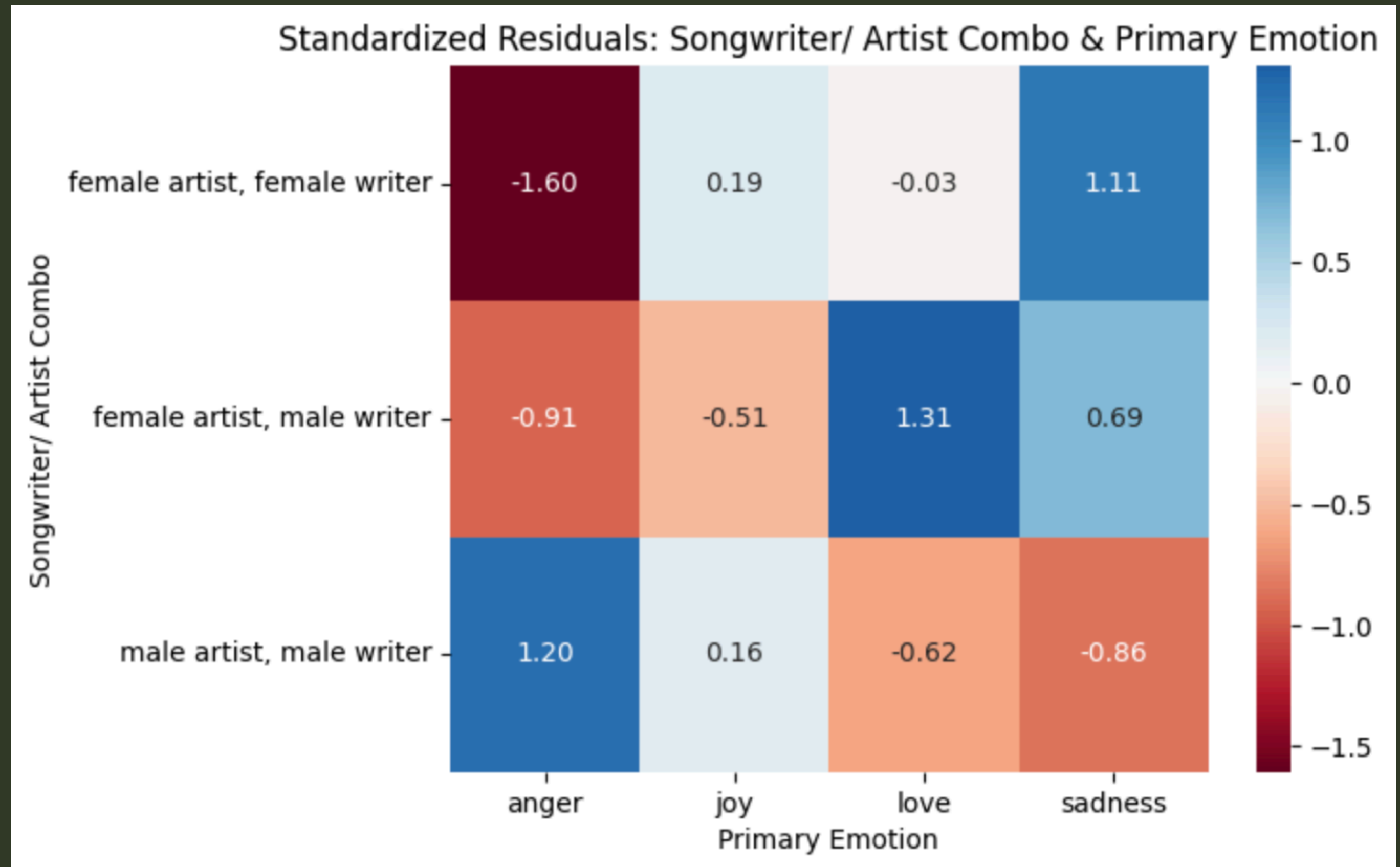


Chi Square Analysis: Artist/ Songwriter Combo

$p \approx 0.14$

$df=6$

Chi-square
statistic ≈ 9.73



Mann-Whitney U Tests

Average for women > average for men:

- Artist gender, rate of emotion-laden words ($p \approx 0.057$)
- Artist gender, primary emotion score ($p \approx 0.006$)
- Artist gender, fear score ($p \approx 0.008$)
- Artist gender, surprise score ($p \approx 0.02$)

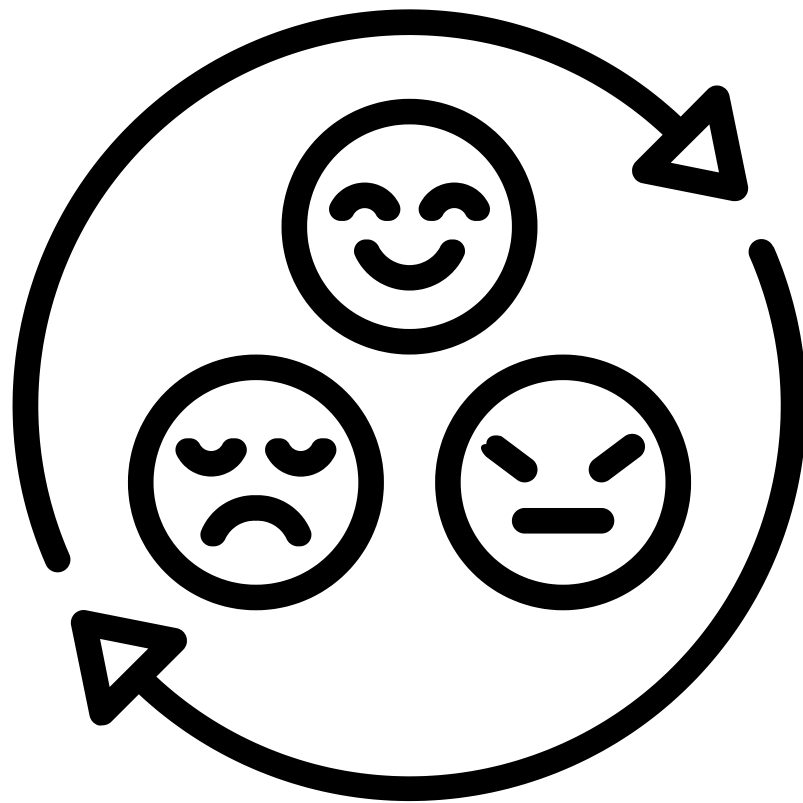
Average for men > average for women:

- Artist gender, anger score ($p \approx 0.00007$)



Results

RESEARCH FINDINGS
AND HIGHLIGHTS



01

GENDER IDENTITY
AND PRIMARY
EMOTION

02

ARTIST GENDER
VS SONGWRITER
GENDER

03

SIGNIFICANCE OF
ANGER

Limitations

CHALLENGES AND
CONSTRAINTS



01

POTENTIAL FOR
BIAS IN EMOTION
MODEL

02

IMPACT OF GENRE

03

"ONE
SONGWRITER"
SKEWED
TOWARDS
EARLIER DECADES

Recommendations

SUGGESTIONS FOR FUTURE
RESEARCH



01

INCLUDE GENRE
IN INDEPENDENT
CATEGORIES

02

ADDITIONAL DATA
COLLECTION

03

INVESTIGATE
ARTIST =
SONGWRITER



Thank You!