



Black Magazines As a Mirror to 1960-1970s American History

A Statistical Approach

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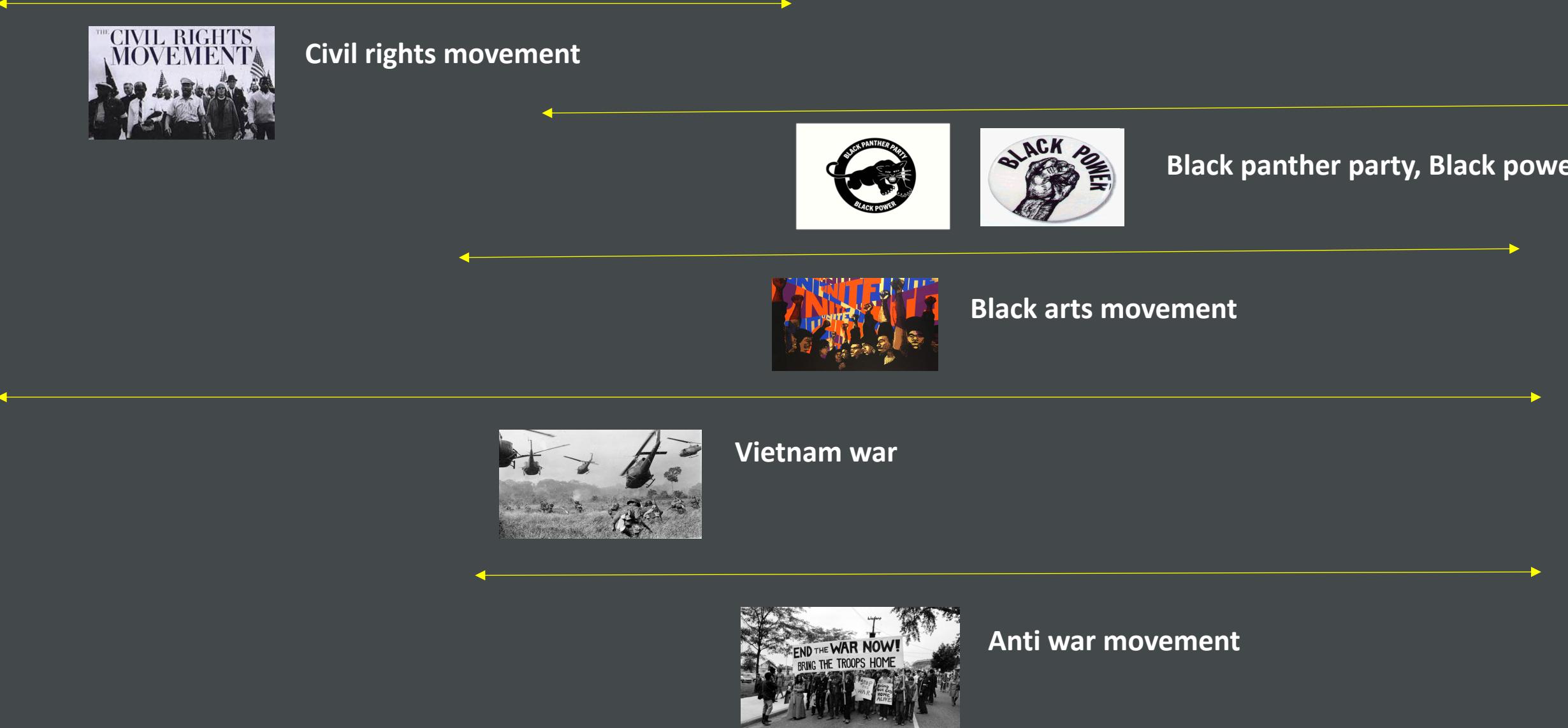
GRADUATE
COLLABORATION
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Timeline



1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976



Magazines

Negro Digest (changed to Black World in 1970, circulation stopped in 1976)



Ebony



Workflow



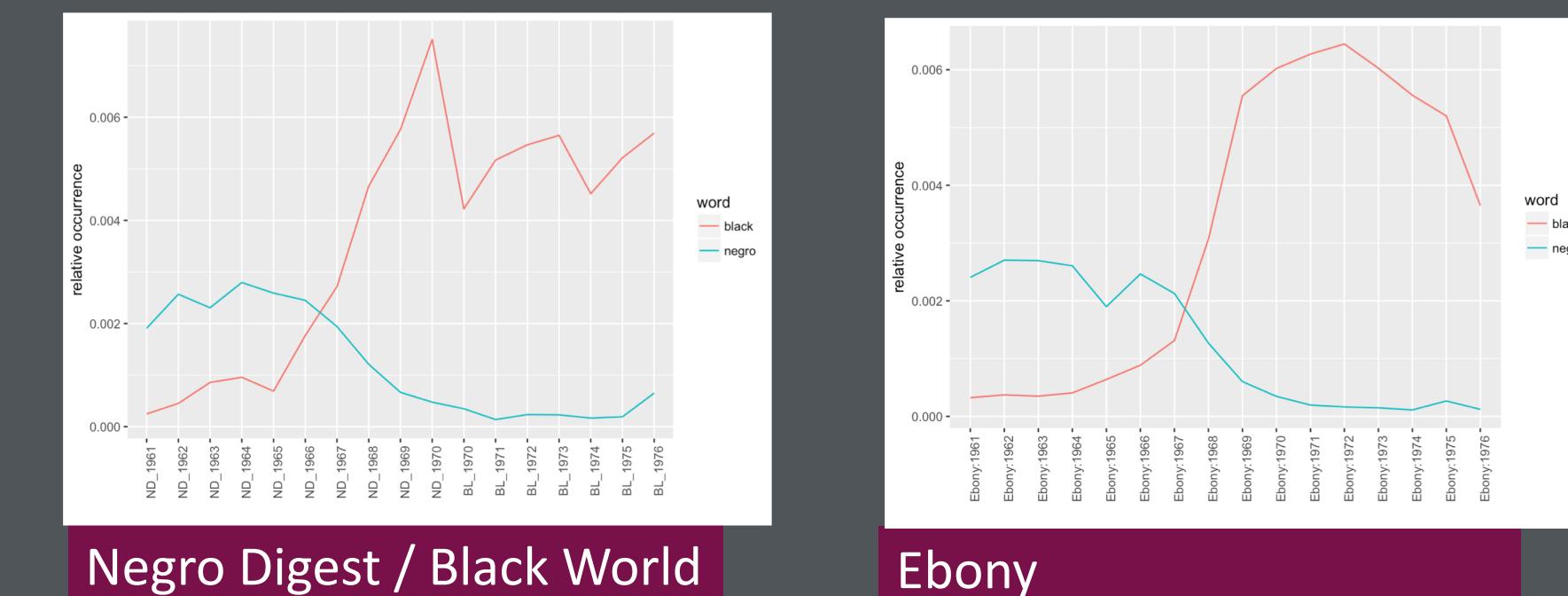
Statistical and Machine Learning tools to analyze the Text (extensive computing using RCC resources)



Interpretation of results and linking to known history

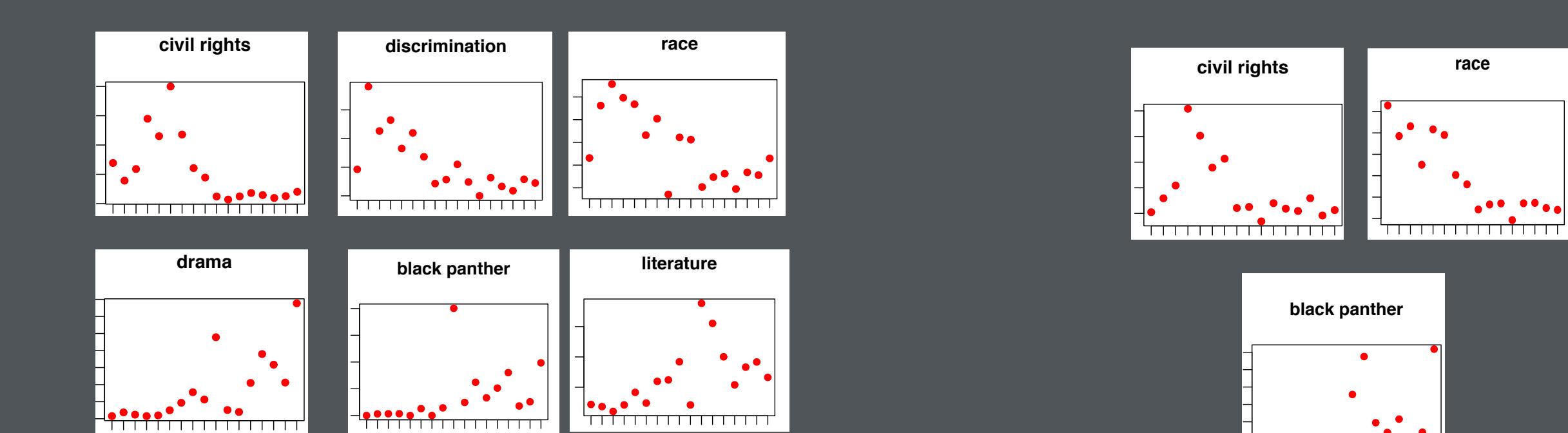
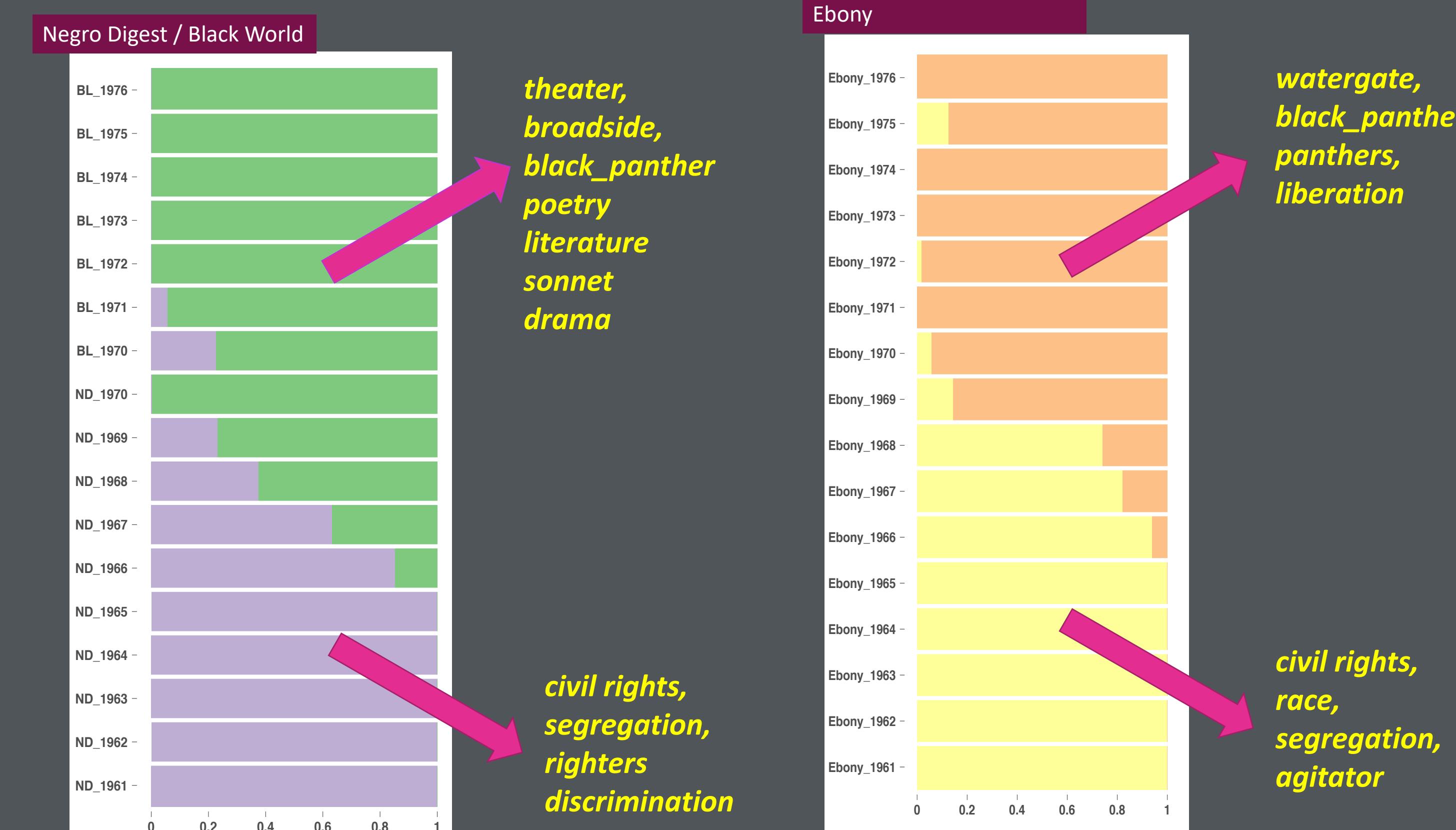
Word frequency analysis

Relative frequencies of (**black**) and (**negro**) related words show an identity shift towards the end of civil rights movement

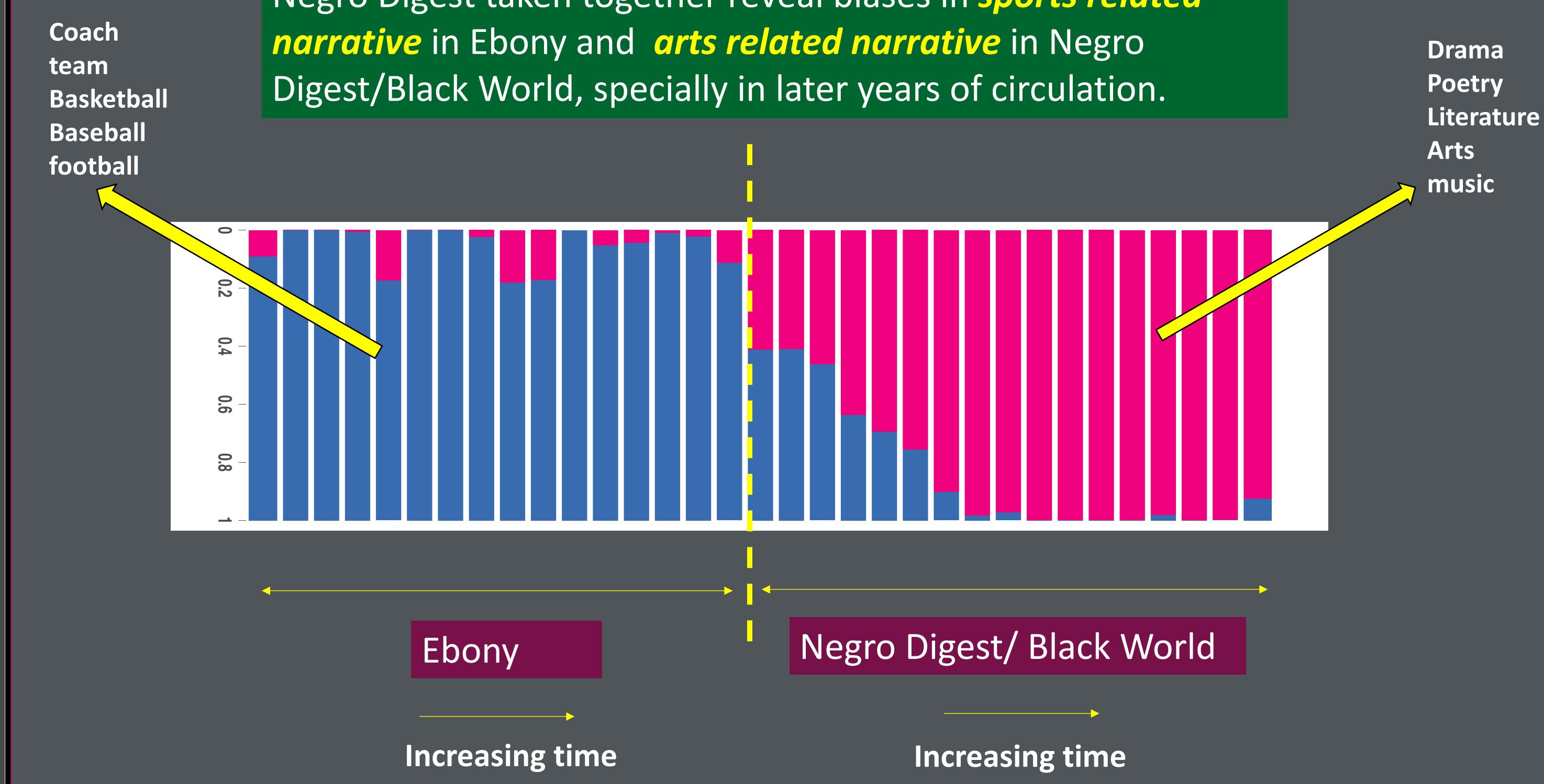


Upon removing black and negro related words terms

Clustering of texts (K=2) from each of the 2 magazines using their yearly data on frequencies of the different words in the vocabulary (topic models). R package : CountClust



Clustering K=2 of yearly texts from Ebony and Black World/ Negro Digest taken together reveal biases in **sports related narrative** in Ebony and **arts related narrative** in Negro Digest/Black World, specially in later years of circulation.

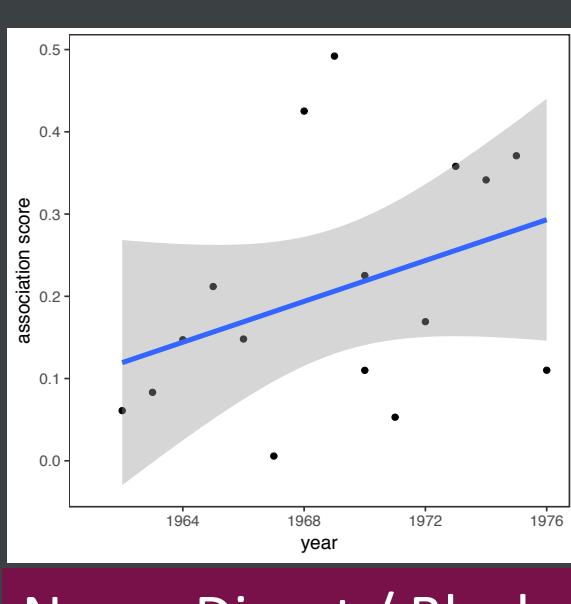
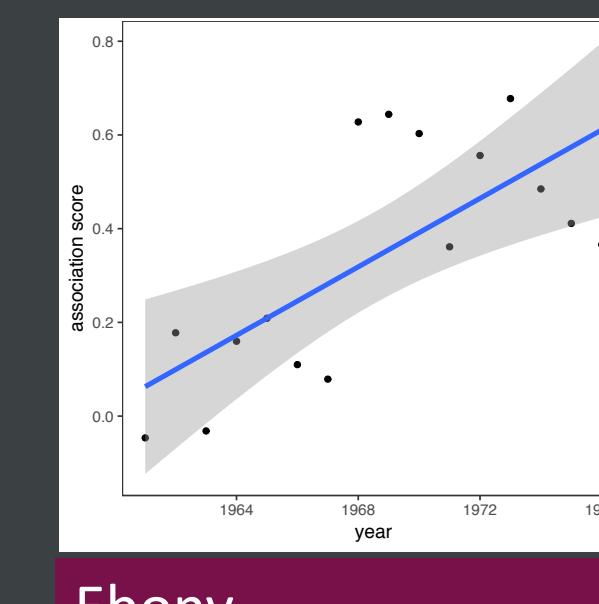
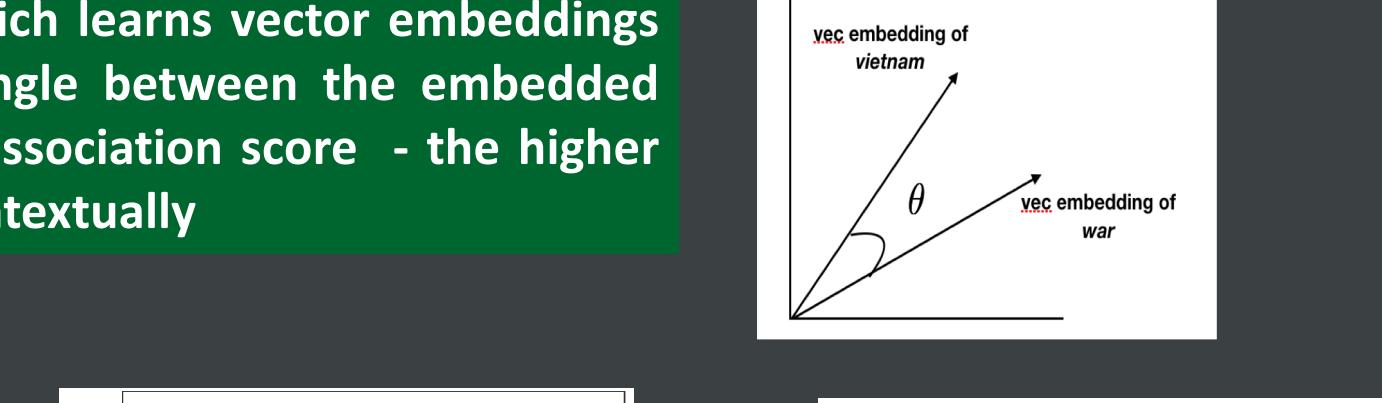


Word pair associations

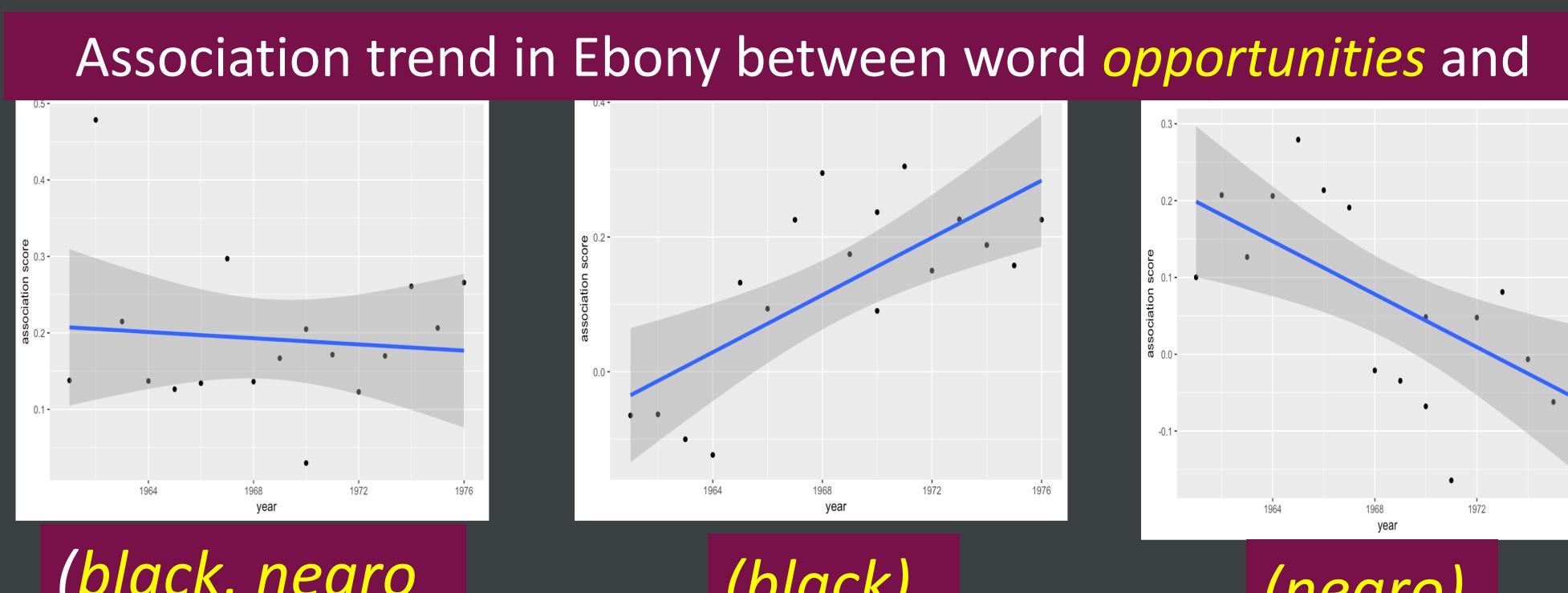
We apply **word2vec** on yearly text data, which learns vector embeddings for words and then computes cosine of angle between the embedded vectors for a word pair to determine their association score - the higher the score, the more similar are the words contextually

(martin luther king)
vs
(assassination)

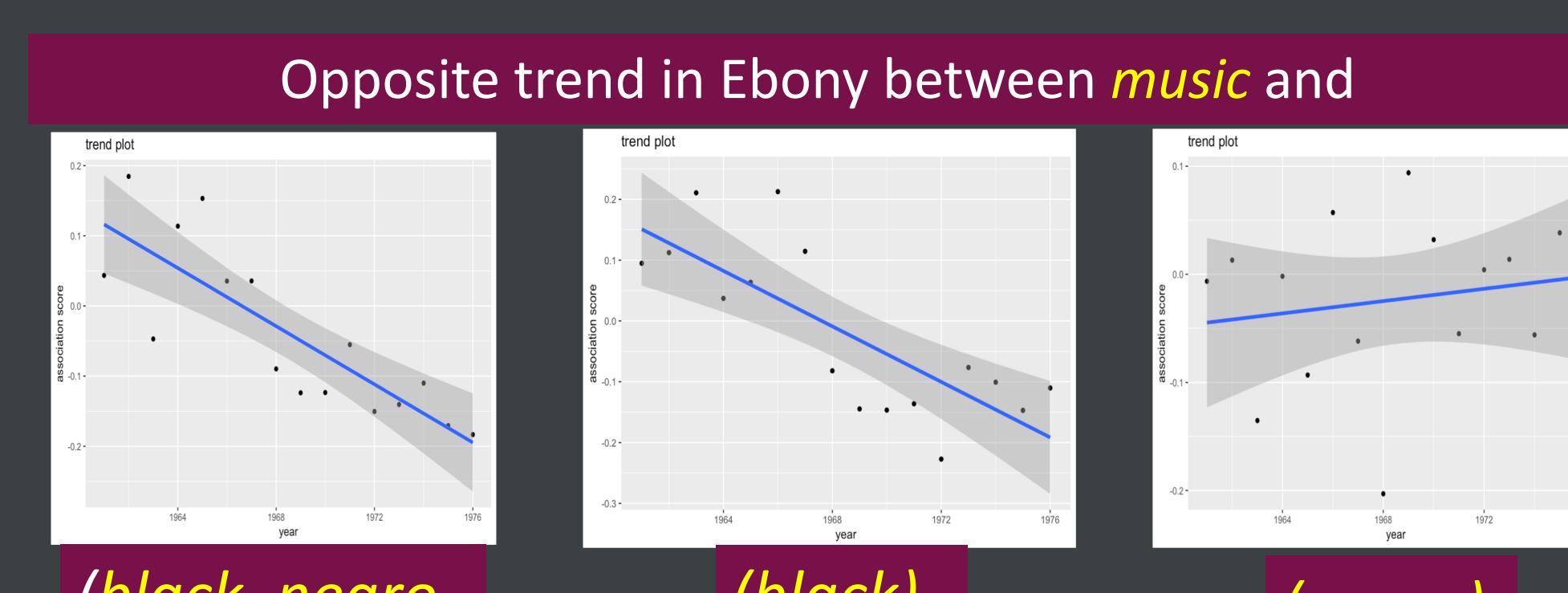
Trend in association score across time



Black, negro identity influencing associations



Other words showing similar trends (both Ebony and ND/BW) : education, economy, progress, leaders, rights, employment, jobs



Other words showing downward trends in association word black/blacks : songs, sing, plays, glory, beautiful, muslims, islam

Consistent word pair associations

Word pairs with consistent high association score:
across all years
(race, relations), (jazz, music), (racial, discrimination)
Consistent pre 1968:
(struggle, oppression), (creed, race), (racism, oppression)
Consistent post 1968:
(education, school), (health, care), (black, community), (mental, health)

Role of the Research Computing Center

- This project marked the first time partnership between the Graduate Arts + Sciences Collaboration Grant team and the Research Computing Center facilitating computational efficiency.
- A special allocation was made in Midway cluster to submit jobs related to the project, with a total of 20,000 service units (SUs) for running computational jobs and a space of 500 GB allocated to store the pdf and extracted text files for all magazine issues over the 16 years of study, together with model output.
- RCC Midway nodes were used for parallel processing of the text files and word2vec model fit on the yearly magazine texts.

Acknowledgements

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