Poster Color Data Analysis

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The terrifying motion picture
from the terrifying No.1 best selle
JAWS
ROY SCHEIDER
ROBE
SHAV
JAWS
Co-starring LORRAINE GARY • MURRAY HAMILTON • A ZANUCK/BROWN PRODUCTIO
Screenplay by PETER BENCHLEY and CARL GOTTLIEB • Based on the novel by PETER BENCHLEY • Music by
Directed by STEVEN SPIELBERG • Produced by RICHARD D. ZANUCK and DAVID BROWN • A UNIVER
TECHNICOLOR® PANAVISION®
PG PARENTAL GUIDANCE SUGGESTED SOME MATERIAL MAY NOT BE SUITABLE FOR PRE-TEENAGERS
ORIGINAL SOUNDTRACK AVAILABLE ON MCA REC
...MAY BE TOO INTENSE FOR YOUNG
METRO-GOLDWYN-MAYER'S TECHNICOLOR TRIUMPH!
WE'RE OFF TO SEE THE WI
THE WONDERFUL..
IZARI
OF O
WITH
RLAND • Frank MORGAN
GER, Bert LAHR, Jack HALEY
urke, Margaret Hamilton
Grapewin and the Munchkins
Produced by Mervyn Le Roy
BIGGEST SENSATION SINCE "SNOW WHITE"
"Over the Rainbow."
"If I only had a Brain."
"We're off to see the Wizard."
"The Merry Old Land of Oz."
"Ding, Dong."
"If I were King of the Forest."
A Metro-Goldwyn-Mayer PICTURE
THE STAR WARS SAGA CONTINUES
THE EMPIRE STRIKES BACK
WARS
MARK HAMILL · HARRISON FORD · CARRIE FISHER
BILLY DEE WILLIAMS · ANTHONY DANIELS
IRVIN KERSHNER · GARY KURTZ
LEIGH BRACKETT and LAWRENCE KASDAN · GEORGE LUCAS
HALLOWEEN
The Night He Came Home!
WALT DISNEY PICTURES
PRESENTS
THE
LION KING

Where We Got Our Data

We collected this data from Kaggle.com and it was initially compiled straight from the IMDB database 4 years ago.

From this dataset, we will be using the following variables:

- **Genre**: A list of Genres that corresponds to each movie. We will mutate this to only include the first genre, being the strongest corresponding genre
- **Poster_Link**: Link to a jpeg file of the poster of the corresponding movie. We used this to create a program returning the percentages of each color used in the poster

From this dataset, we created the following variable:

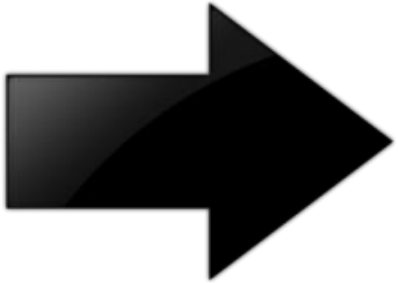
- **Colors** (Red, Green, Blue, Maroon, Pink, Brown, Orange, Apricot, Olive, Yellow, Beige, Lime, Mint, Teal, Cyan, Navy, Purple, Lavender, Magenta, Black, Grey, White): A list of each color we are testing with the value corresponding to the percent of that color found in that poster

From URL to color data

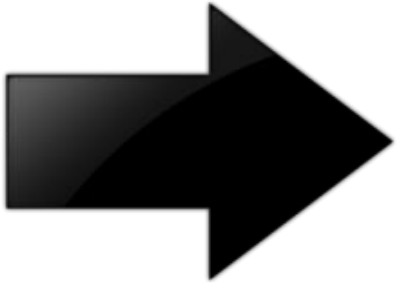
Each movie in our data set had a URL that let to a JPEG of its poster. Our first job was to get useful information out of these JPEGs so we had a good set of data for our analysis. We took the following steps to get the color data from each poster:

1. Scraped the contents of each webpage
2. Converted each JPEG to the PPM format, a much more readily parsed image format
3. Converted each PPM to a simple BitMap we made, that housed a table of pixels
4. Creating a set of 22 simple, distinct, and representative colors of the movie posters
5. Simplified each BitMap by classifying each pixel into one of the simple colors in our set by using the Euclidean distance between each pixel and each simple color, and setting each pixel to its closest match
6. Finding the percentages of each simple color in each movie poster and exporting it in a CSV

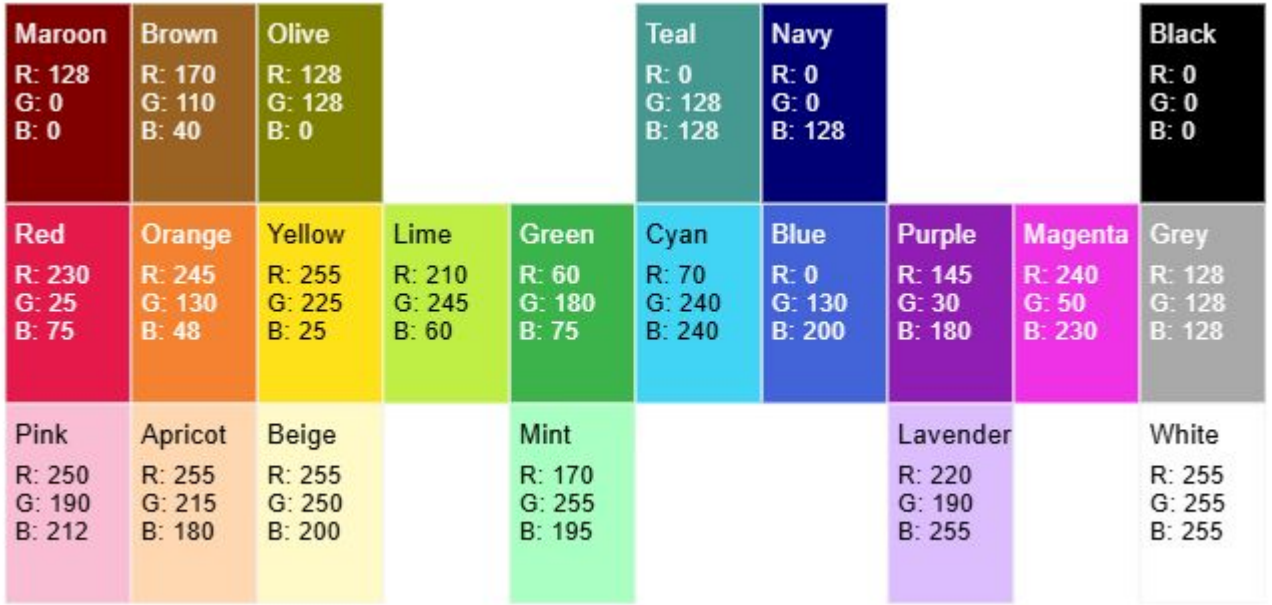
Poster Color Simplification

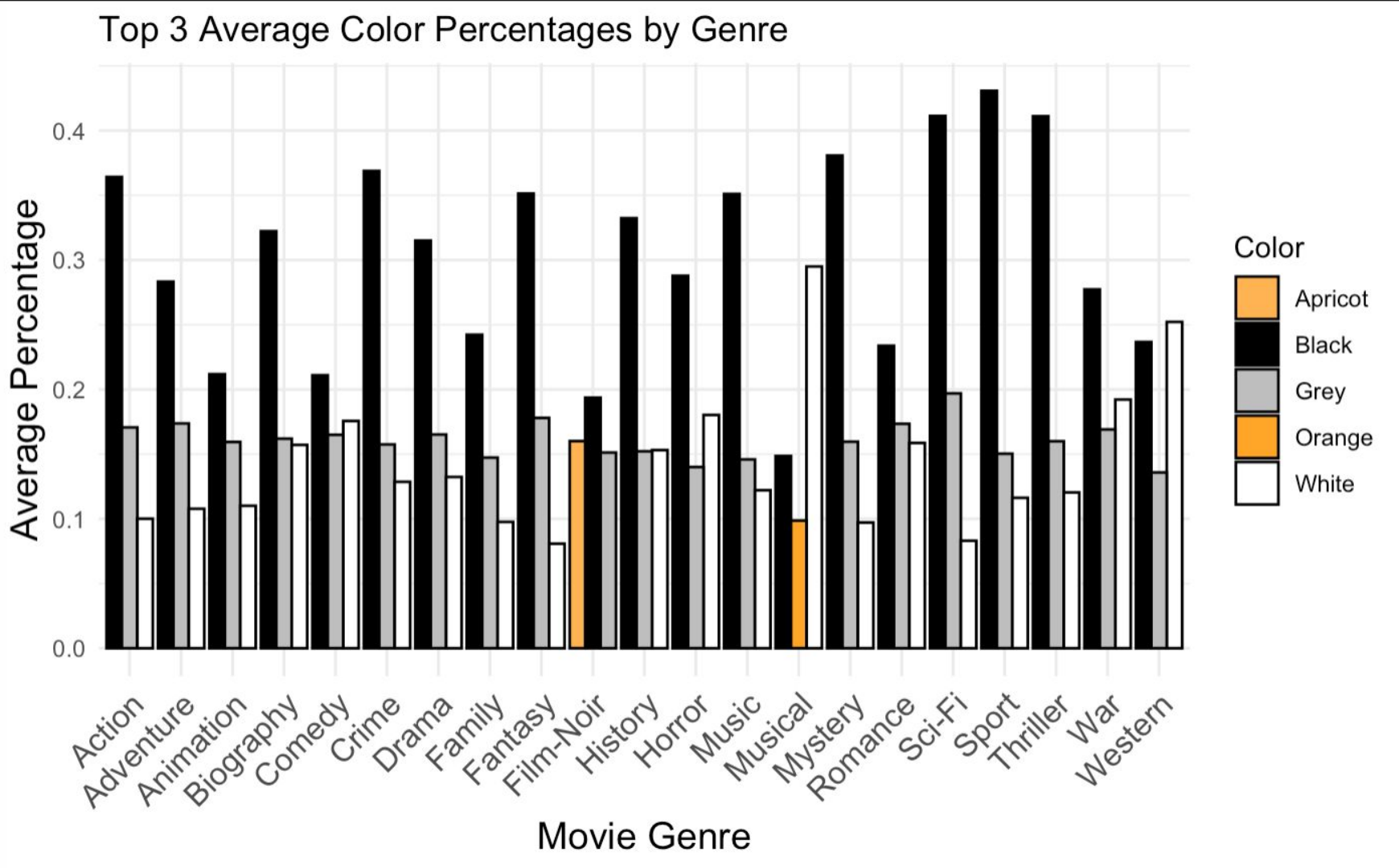


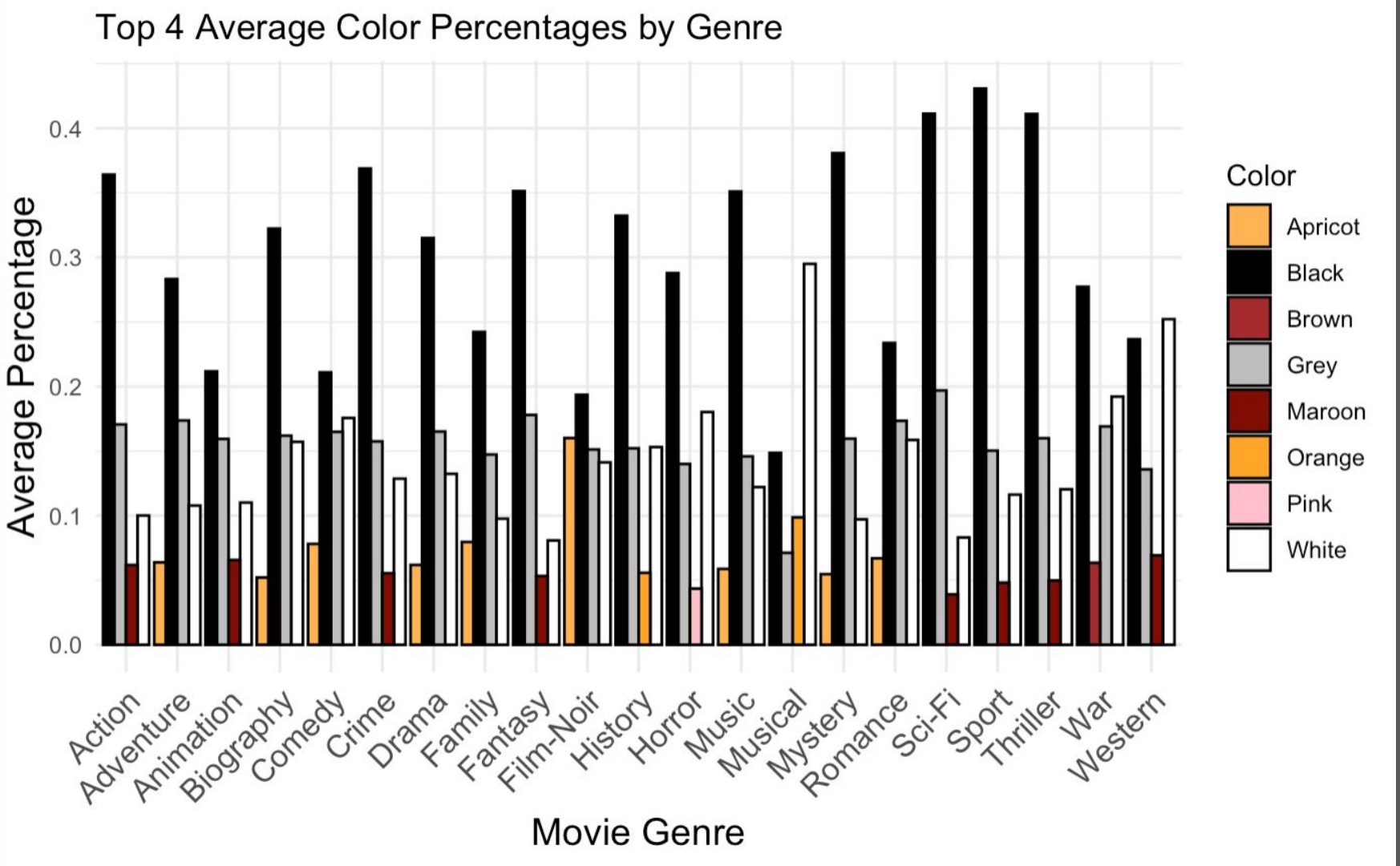
Poster Color Simplification (cont.)

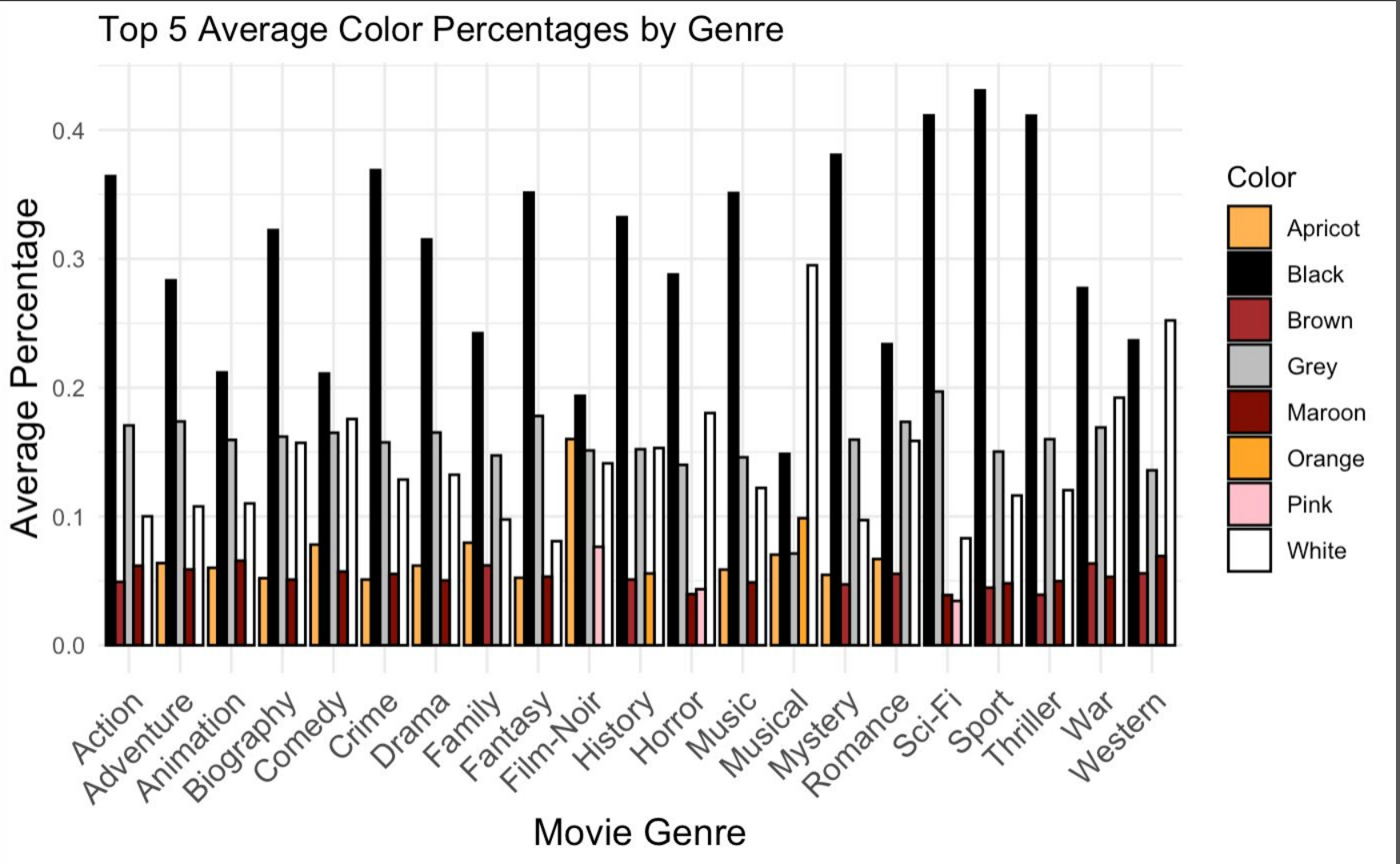


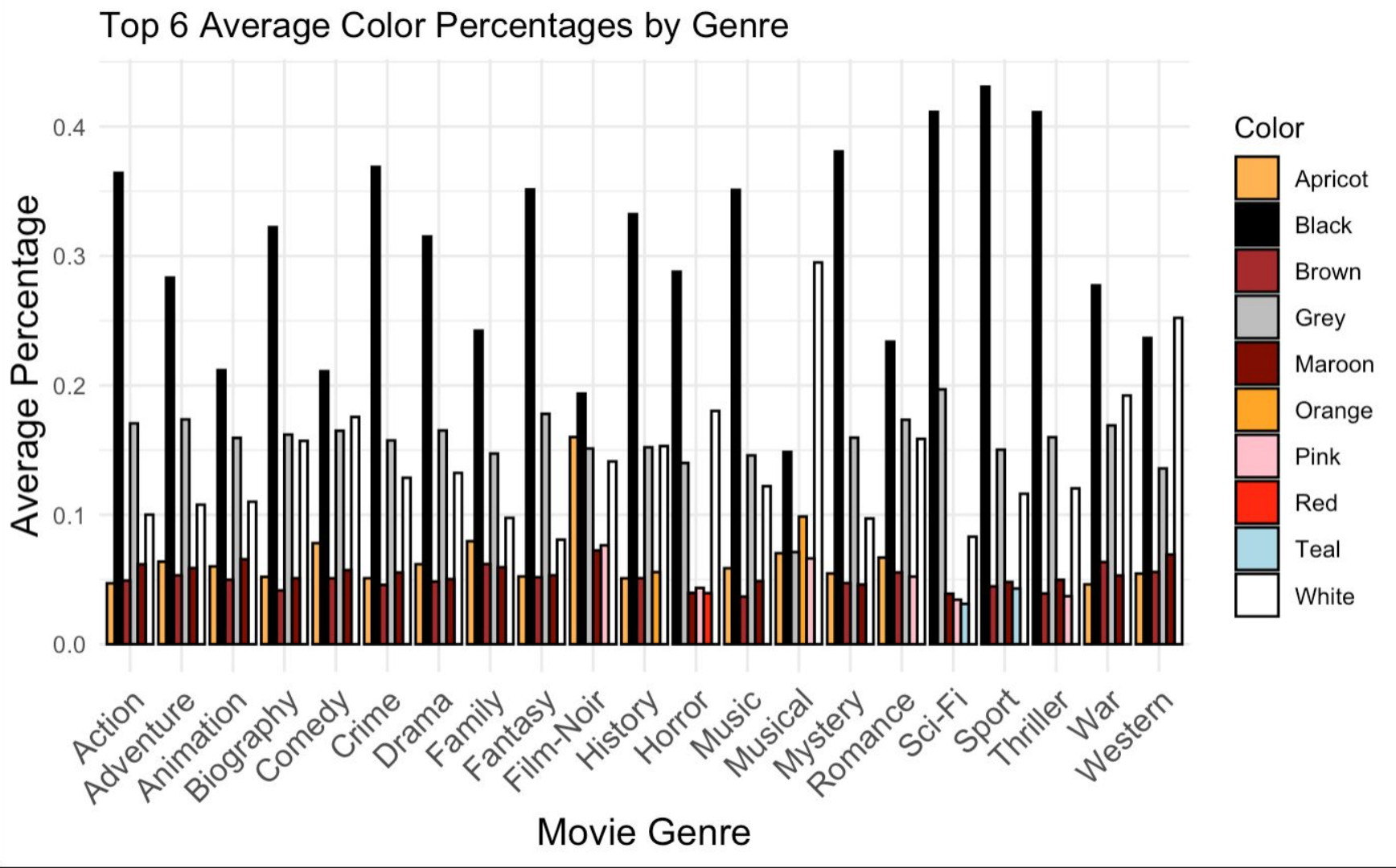
Our set of colors

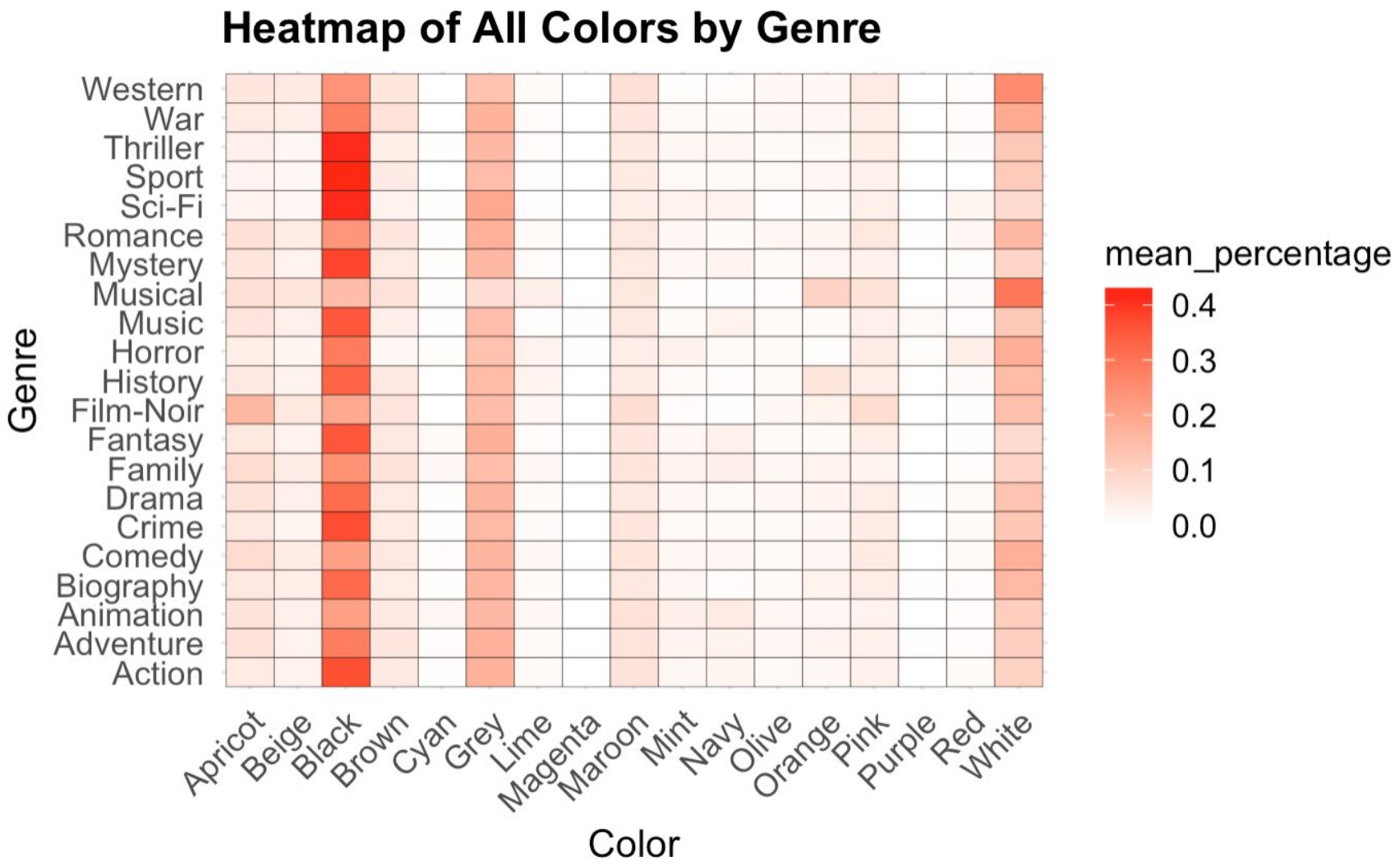


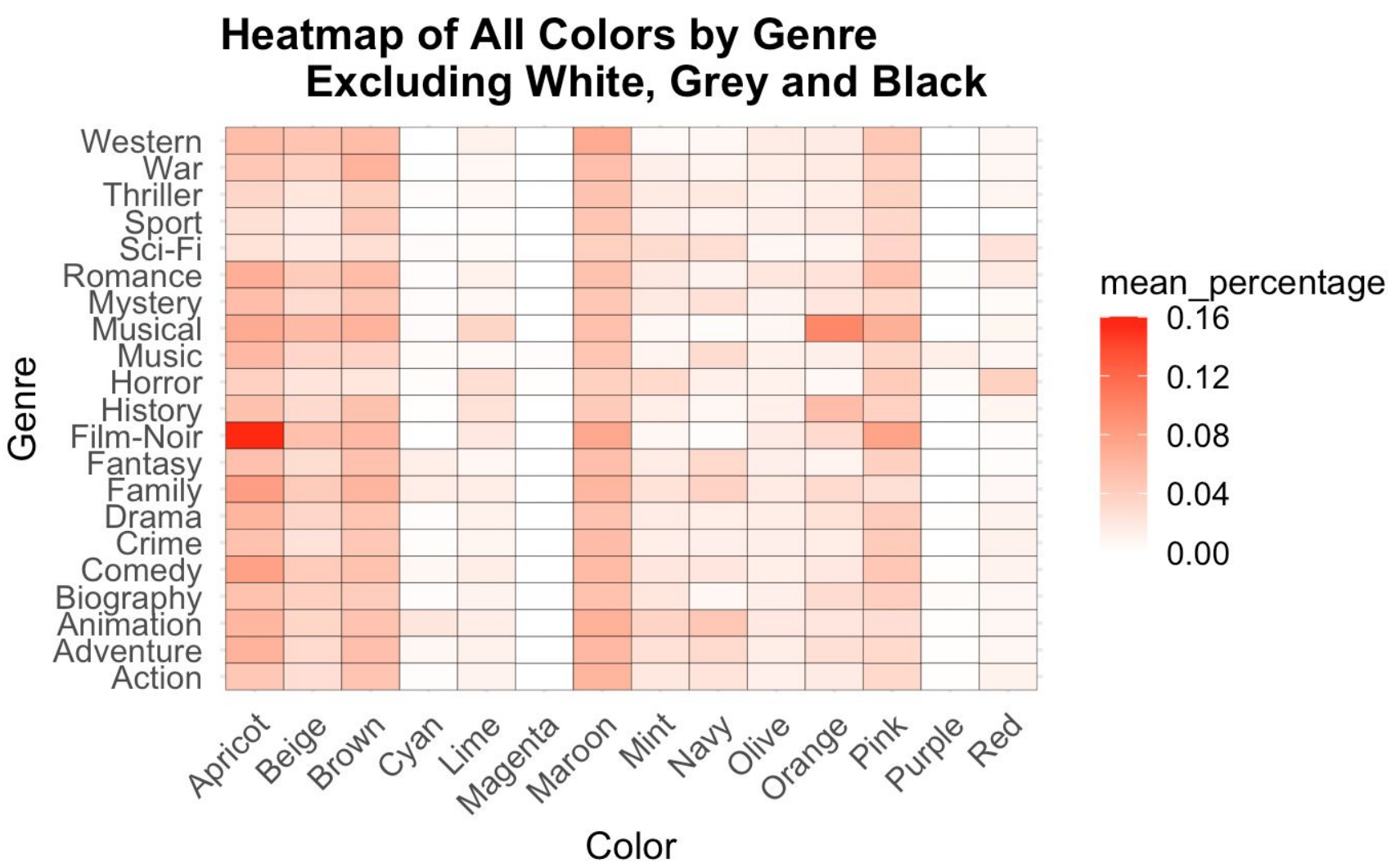

Top 3 Average Color Percentages by Genre
Average Percentage
0.0
0.1
0.2
0.3
0.4
Action
Adventure
Animation
Biography
Comedy
Crime
Drama
Family
Fantasy
Film-Noir
History
Horror
Music
Musical
Mystery
Romance
Sci-Fi
Sport
Thriller
War
Western
Movie Genre
Color
Apricot
Black
Grey
Orange
White


Top 4 Average Color Percentages by Genre
Average Percentage
0.0
0.1
0.2
0.3
0.4
Action
Adventure
Animation
Biography
Comedy
Crime
Drama
Family
Fantasy
Film-Noir
History
Horror
Music
Musical
Mystery
Romance
Sci-Fi
Sport
Thriller
War
Western
Movie Genre
Color
Apricot
Black
Brown
Grey
Maroon
Orange
Pink
White


Top 5 Average Color Percentages by Genre
Average Percentage
0.0
0.1
0.2
0.3
0.4
Action
Adventure
Animation
Biography
Comedy
Crime
Drama
Family
Fantasy
Film-Noir
History
Horror
Music
Musical
Mystery
Romance
Sci-Fi
Sport
Thriller
War
Western
Movie Genre
Color
Apricot
Black
Brown
Grey
Maroon
Orange
Pink
White


Top 6 Average Color Percentages by Genre
Average Percentage
0.0
0.1
0.2
0.3
0.4
Action
Adventure
Animation
Biography
Comedy
Crime
Drama
Family
Fantasy
Film-Noir
History
Horror
Music
Musical
Mystery
Romance
Sci-Fi
Sport
Thriller
War
Western
Movie Genre
Color
Apricot
Black
Brown
Grey
Maroon
Orange
Pink
Red
Teal
White


Heatmap of All Colors by Genre
Genre
Western
War
Thriller
Sport
Sci-Fi
Romance
Mystery
Musical
Music
Horror
History
Film-Noir
Fantasy
Family
Drama
Crime
Comedy
Biography
Animation
Adventure
Action
Apricot
Beige
Black
Brown
Cyan
Grey
Lime
Magenta
Maroon
Mint
Navy
Olive
Orange
Pink
Purple
Red
White
Color
mean_percentage
0.4
0.3
0.2
0.1
0.0


Heatmap of All Colors by Genre
Excluding White, Grey and Black
Genre
Western
War
Thriller
Sport
Sci-Fi
Romance
Mystery
Musical
Music
Horror
History
Film-Noir
Fantasy
Family
Drama
Crime
Comedy
Biography
Animation
Adventure
Action
Apricot
Beige
Brown
Cyan
Lime
Magenta
Maroon
Mint
Navy
Olive
Orange
Pink
Purple
Red
Color
mean_percentage
0.16
0.12
0.08
0.04
0.00

Results Using the Heatmap

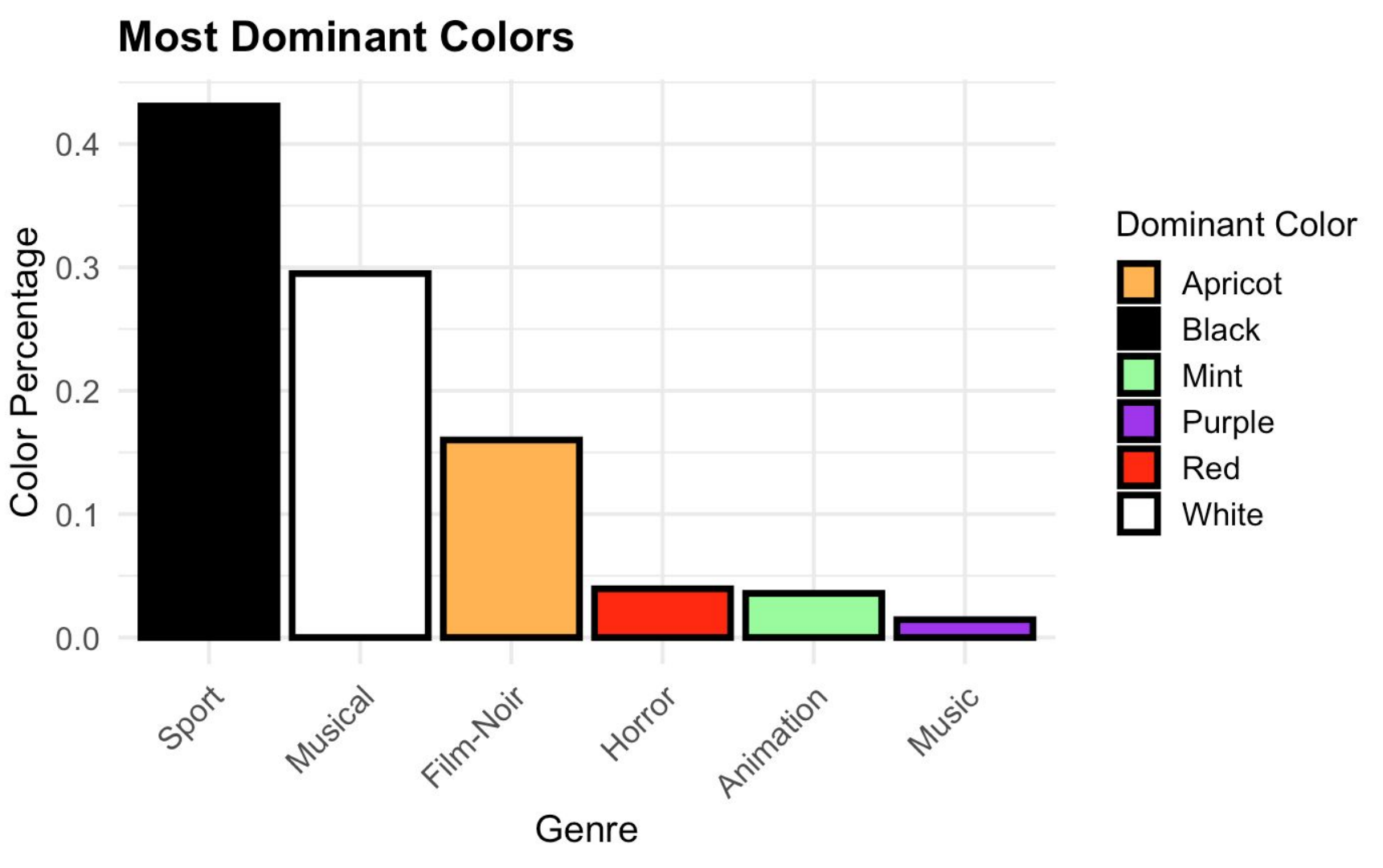
The following have significant evidence of difference between genres on the heatmap

- Red
- Maroon
- Brown
- Orange
- Apricot
- Beige
- Mint
- Purple
- Black
- Magenta
- White

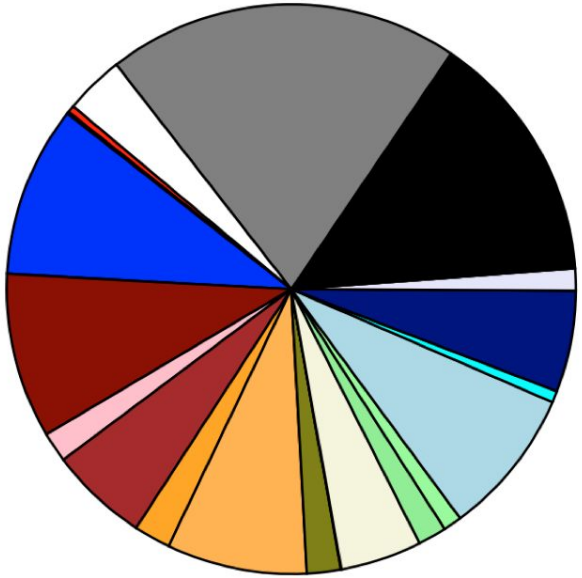
Notable strong color proportions include:

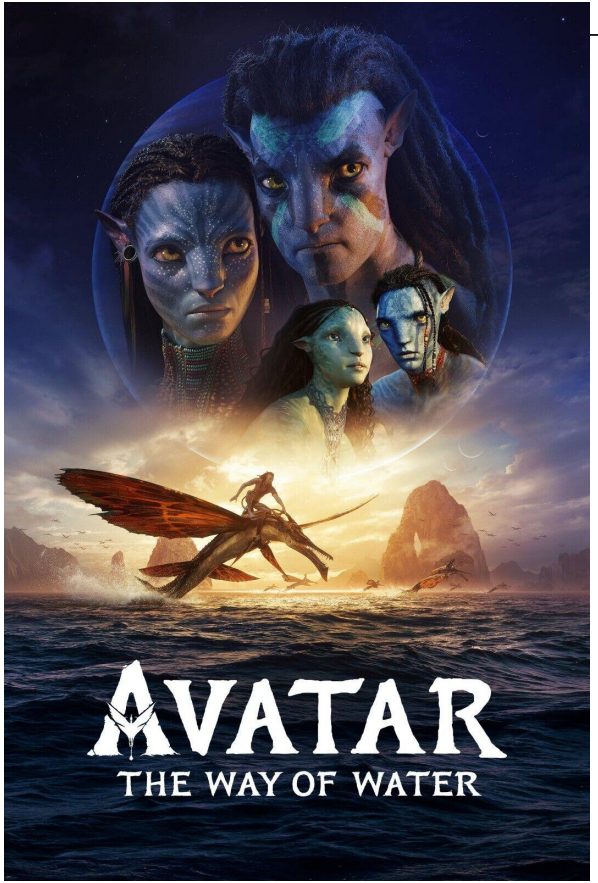
- Sports and Black
- Musical and White
- Film-Noir and Apricot

This means that the proportion that these colors show up in posters depends heavily on the genre

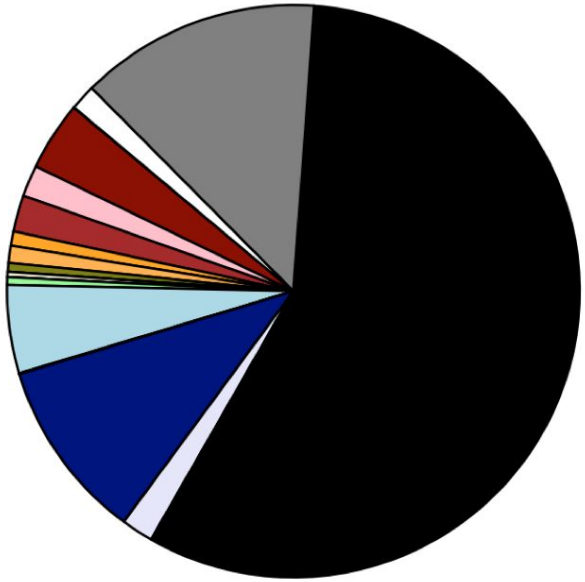

Most Dominant Colors
Color Percentage
0.4
0.3
0.2
0.1
0.0
Sport
Musical
Film-Noir
Horror
Animation
Music
Genre
Dominant Color
Apricot
Black
Mint
Purple
Red
White

Color Distribution in Toy Story's Poster

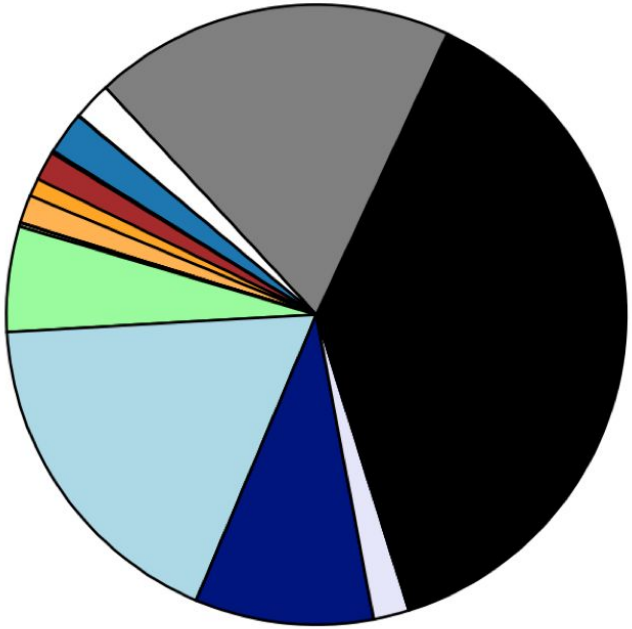


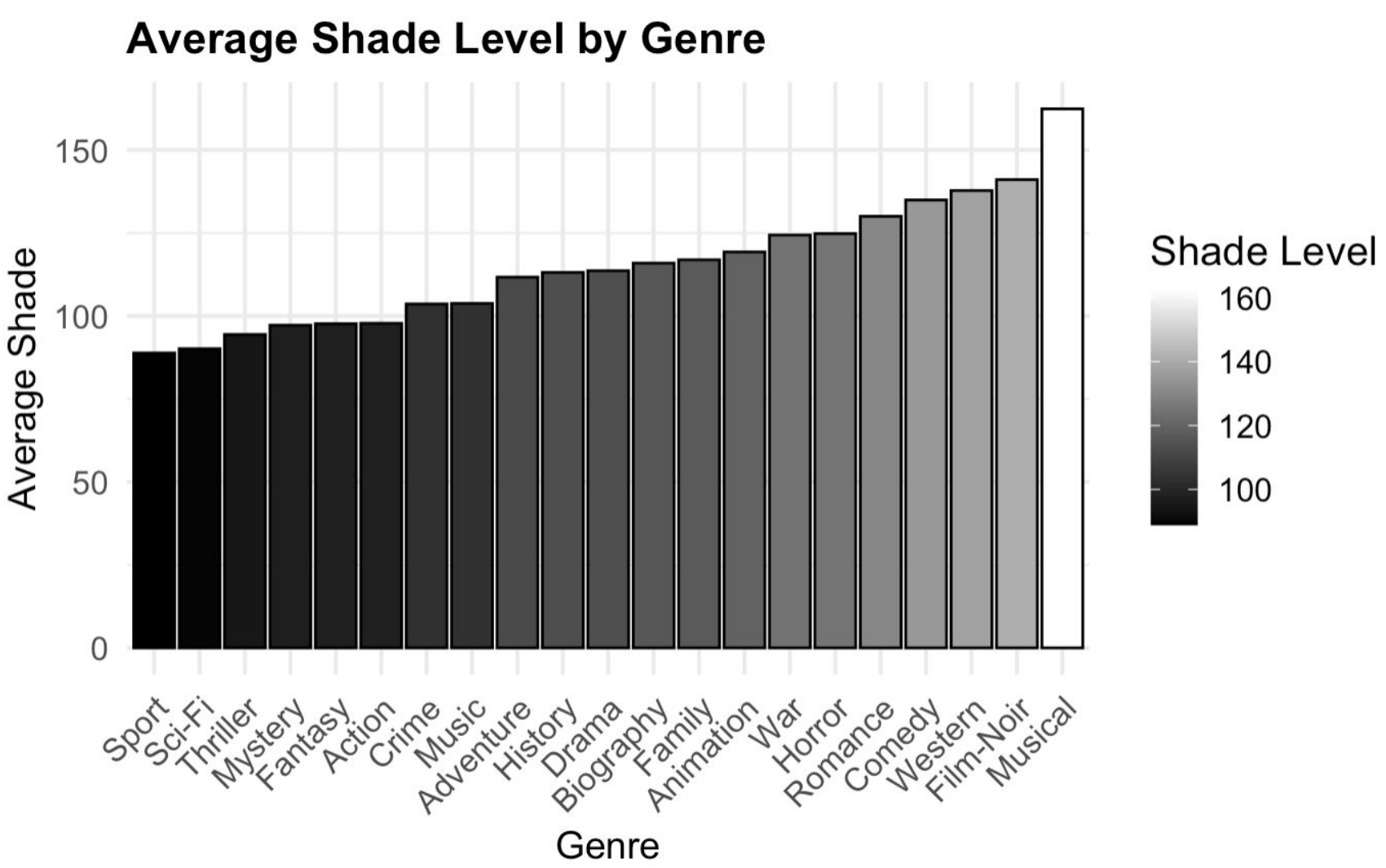


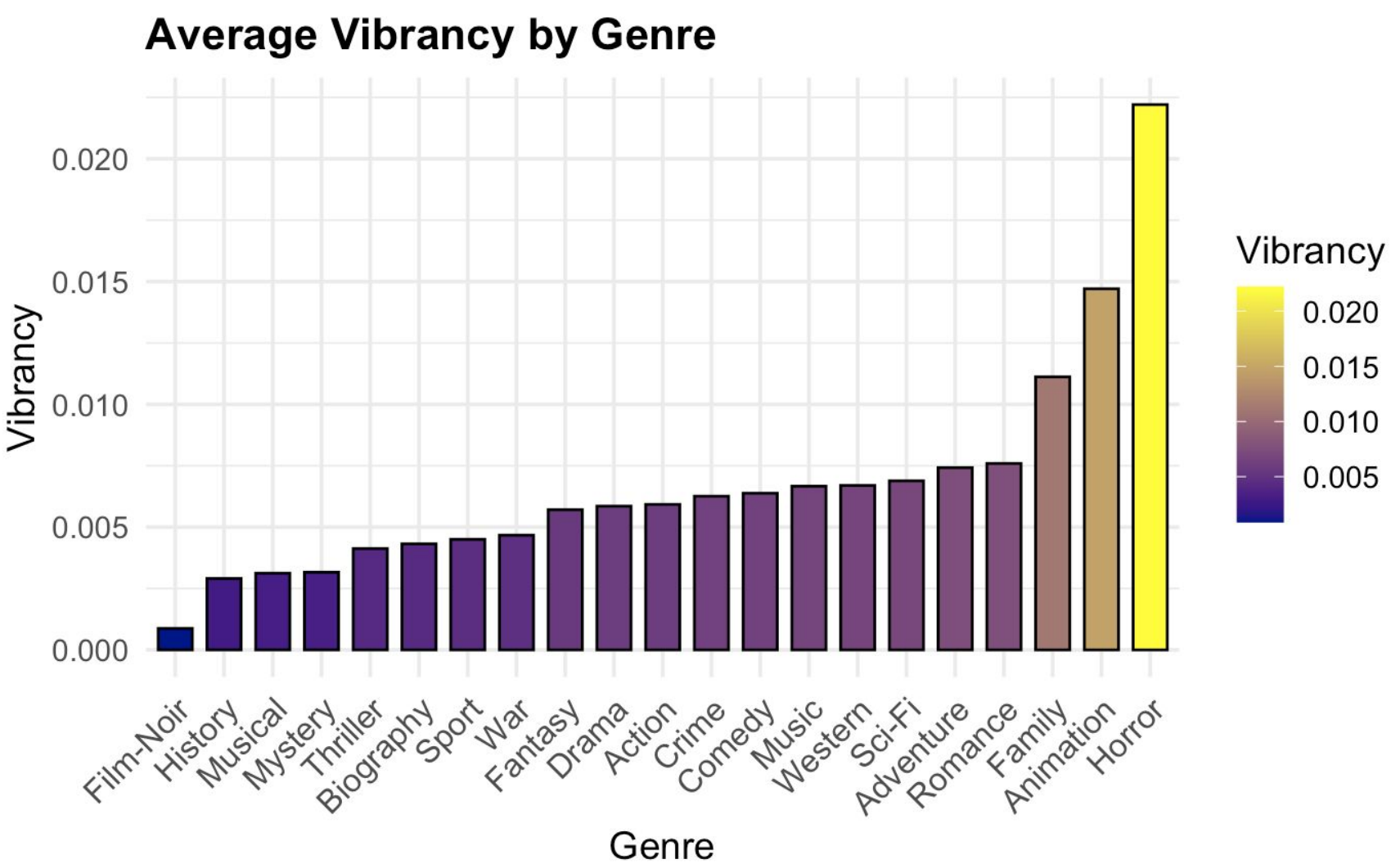
Color Distribution in Avatar's Poster



Color Distribution in The Dark Knight's Poster




Average Shade Level by Genre
Average Shade
150
100
50
0
Sport
Sci-Fi
Thriller
Mystery
Fantasy
Action
Crime
Music
Adventure
History
Drama
Biography
Family
Animation
War
Horror
Romance
Comedy
Western
Film-Noir
Musical
Genre
Shade Level
160
140
120
100


Average Vibrancy by Genre
Vibrancy
0.020
0.015
0.010
0.005
0.000
Film-Noir
History
Musical
Mystery
Thriller
Biography
Sport
War
Fantasy
Drama
Action
Crime
Comedy
Music
Western
Sci-Fi
Adventure
Romance
Family
Animation
Horror
Genre
Vibrancy
0.020
0.015
0.010
0.005

Limitations

- Shaded colors in posters tend to get classified as grayscale where people would typically view them as a color that is in a shadow
- Around 5% of the dataset had broken links

Conclusions

- There is a strong relationship between color usage in posters and their genres
- Horror, Animation, Family, and Romance movies tend to be more vibrant
- Film Noir, History, and Musical movies tend to be less vibrant
- Certain genres favor certain tones, such as Film-Noir favoring Apricot tones, possibly suggesting utilization of vintage sepia tones
- Movies that are thematically darker (Thriller, Crime, Mystery) tend to have posters that are made of darker shades than more upbeat movie genres (Romance, Comedy, Musical)