```
import imageio as iio
import visvis as vv
import numpy as np
import matplotlib
import matplotlib.pyplot as pyplot
import pandas as pd
from PIL import Image
import csv
import os
%matplotlib inline
pd.options.mode.chained_assignment = None

# Set working directories
directory = r'C:\Users\jeric\OneDrive\Documents\classFiles\DSC680\Project_1-new\puppeteer_scrape\images\\'
directory2 = r'C:\Users\jeric\OneDrive\Documents\classFiles\DSC680\Project_1-new\puppeteer_scrape\thumbs\\'
directory3 = r'C:\Users\jeric\OneDrive\Documents\classFiles\DSC680\Project_1-new\puppeteer_scrape\thumbs_min\\'
```

Bring in the Winner's csv data

```
df = pd.read_csv(r'C:\Users\jeric\OneDrive\Documents\classFiles\DSC680\Project_1-new\puppeteer_scrape\data.csv'
df.columns = ['hash','site_nm', 'date','country','img_url','img_full_nm']
df['winner'] = 1

print("Rows in df: "+str(len(df)))

df.head()
```

```
Rows in df: 4686
```

	hash	site_nm	date	country	img_url	i
0	8ddbf2f936a5fca98539799183a36a2b	Marble	June 11, 2022	Netherlands	https://assets.awwwards.com/awards/media/cache...	8ddbf2f936a5fca985397991
1	b4ef75558f97d08d285bce6174d1dd84	POLA: Mother's Day	June 10, 2022	Japan	https://assets.awwwards.com/awards/media/cache...	b4ef75558f97d08d285bce617
2	ea4e13c773862ebf76812971cdd07b25	Zulu Longines	June 9, 2022	France	https://assets.awwwards.com/awards/media/cache...	ea4e13c773862ebf76812971cc
3	33e8c7a0c2c17fbc7bafffb80f808bbe	Ana Blagojevic	June 8, 2022	Italy	https://assets.awwwards.com/awards/media/cache...	33e8c7a0c2c17fbc7bafffb80f
4	caec15565ed1b1b6efec6585191a0530	Kim Kneipp Folio	June 7, 2022	United States	https://assets.awwwards.com/awards/media/cache...	caec15565ed1b1b6efec658519

Bring in the Nominee's csv data

```
df2 = pd.read_csv(r'C:\Users\jeric\OneDrive\Documents\classFiles\DSC680\Project_1-new\puppeteer_scrape\data_nom
df2.columns = ['hash','site_nm', 'date','country','img_url','img_full_nm']
df2['winner'] = 0

print("Rows in df: "+str(len(df2)))

df2.head()
```

```
Rows in df: 13083
```

	hash	site_nm	date	country	img_url	i
0	f810500fcf4ffdbd89571a469951c835	July	10-Jun-22	United States	https://assets.awwwards.com/awards/media/cache...	f810500fcf4ffdbd89571a469
1	3f2dfa1d6327bbd1058ff43834491597	Cobo©	10-Jun-22	Netherlands	https://assets.awwwards.com/awards/media/cache...	3f2dfa1d6327bbd1058ff4383
2	2777b6d0afb87d89ffa9f84d89704145	Paul McCartney	10-Jun-22	United Kingdom	https://assets.awwwards.com/awards/media/cache...	2777b6d0afb87d89ffa9f84d8
3	36301ba2bb96c74c9c9b9deecd7cb79a	Callista	10-Jun-22	Netherlands	https://assets.awwwards.com/awards/media/cache...	36301ba2bb96c74c9c9b9deec
4	fe15f5752fdbdd501cddcc17012a057f	.PEAM	10-Jun-22	Germany	https://assets.awwwards.com/awards/media/cache...	fe15f5752fdbdd501cddcc170

Comparing CSV Files

```
df['date'] = pd.to_datetime(df['date']) #winners
df2['date'] = pd.to_datetime(df2['date']) #nominees

print("Winner's record count: "+str(len(df)))
print("Winner's min date: "+str(df['date'].min()))
print("Winner's max date: "+str(df['date'].max()))
print(" ")
print("Nominee's record count: "+str(len(df2)))
print("Nominee's min date: "+str(df2['date'].min()))
print("Nominee's min date: "+str(df2['date'].max()))

Nom_Min = df2['date'].min()
Nom_Max = df2['date'].max()

print(Nom_Min)
print(Nom_Max)
```

```
Winner's record count: 4686
Winner's min date: 2009-06-01 00:00:00
Winner's max date: 2022-06-11 00:00:00

Nominee's record count: 13083
Nominee's min date: 2019-12-05 00:00:00
Nominee's min date: 2022-06-10 00:00:00
2019-12-05 00:00:00
2022-06-10 00:00:00
```

Trimming Winner's dataframe to match date range of nominee's dataframe

```
df2_trunc = df[(df.date <= Nom_Max) & (df.date>= Nom_Min)]
len(df2_trunc)
```

```
906
```

Remove Winners from Nominees dataset

```
print("Winner(1) count in nominee's dataframe")
df3 = pd.DataFrame()
df3 = df2.assign(winner=df2_trunc['site_nm'].isin(df2['site_nm']).astype(int))
df3.groupby(['winner'], dropna=False, as_index=False).size()
```

```
Winner(1) count in nominee's dataframe
```

	winner	size
0	0.0	14
1	1.0	892
2	NaN	12177

Setting NaNs to zero

```
print("Winner(1) count in dataframe after checking against winner's file")
df3['winner'] = df3['winner'].fillna(0)
df3.groupby(['winner'], dropna=False, as_index=False).size()
```

```
Winner(1) count in dataframe after checking against winner's file
```

	winner	size
0	0.0	12191
1	1.0	892

Dropping duplicates from nominees dataset

```
df3 =  df3[df3.winner != 1]
df3.groupby(['winner'], dropna=False, as_index=False).size()
```

	winner	size
0	0.0	12191

Combining datasets into 1 dataframe

```
print("Winner Dataframe length: "+str(len(df2_trunc)))
print("Non-winning Nominees Dataframe length:"+str(len(df3)))
print("Should add to: "+ str(len(df2_trunc)+len(df3)))

cmb_df = pd.concat([df3,df2_trunc], axis = 'rows')
len(cmb_df)
```

```
Winner Dataframe length: 906
Non-winning Nominees Dataframe length:12191
Should add to: 13097
```

```
13097
```

```
cmb_df['winner'].value_counts()
```

```
0.0    12191
1.0      906
Name: winner, dtype: int64
```

Identify and drop any records with image issues (404 errors)

```
n=0
tot = 0
for i, row in cmb_df.iterrows():
    tot = tot + 1
    filename = row[5]
    try:
        img = Image.open(directory+filename)
        if img is not None:
            cmb_df.at[i,'404_error'] = 0

    except:
        cmb_df.at[i,'404_error'] = 1
        n = n+1

print("Total Images: "+ str(tot))
print("Error Images: "+str(n))
```

```
Total Images: 13097
Error Images: 3282
```

```
cmb_df_2 = cmb_df[(cmb_df['404_error']==0)]
len(cmb_df_2[(cmb_df_2['404_error']==1)])
```

```
0
```

```
len(cmb_df_2)
```

```
9815
```

```
cmb_df_2['winner'].value_counts()
```

```
0.0    8918
1.0     897
Name: winner, dtype: int64
```

Creating 50 X 50 copies of images

```
#####################
### ONLY RUN THIS ONCE
#####################
for i, row in cmb_df.iterrows():
    filename = row[5]
    try:
        img = Image.open(directory+filename)
        if img is not None:
            image = Image.open(directory+filename)
            image = image.convert('RGB')
            image.thumbnail((50,50))
            image.save(directory3+row[0]+'.jpg')
    except:
        print("skipped")
```

Add unique color count from 50X50 images to dataframe

```
##Checking that all rows in dataframe were updated
missing_color_count = len(cmb_df_2[cmb_df_2['unique_color_count_50'].isnull() == True])
print("Missing Color Count: " + str(missing_color_count))
```

```
Missing Color Count: 0
```

```
print("Max Color Count:" +str(max(cmb_df_2['unique_color_count_50'])))
print("Min Color Count:"+str(min(cmb_df_2['unique_color_count_50'])))
```

```
Max Color Count:1817.0
Min Color Count:22.0
```

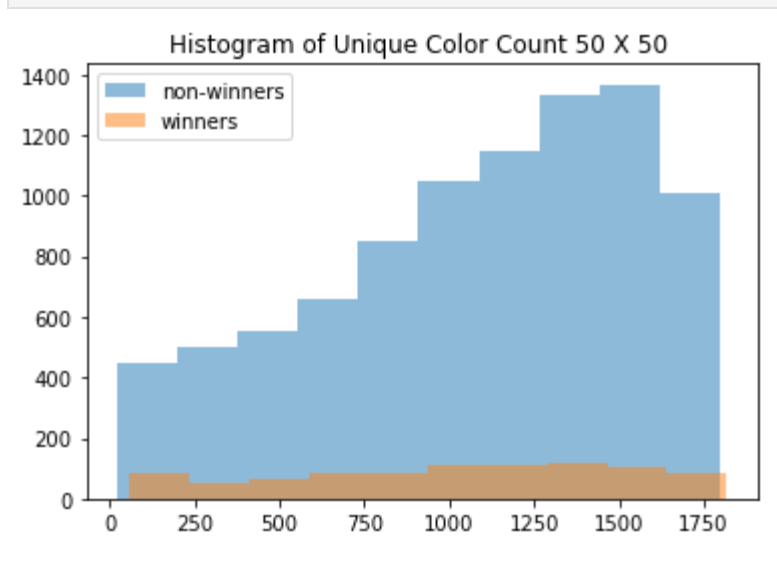
```
cmb_df_2['winner'].value_counts()
```

```
0.0    8918
1.0     897
Name: winner, dtype: int64
```

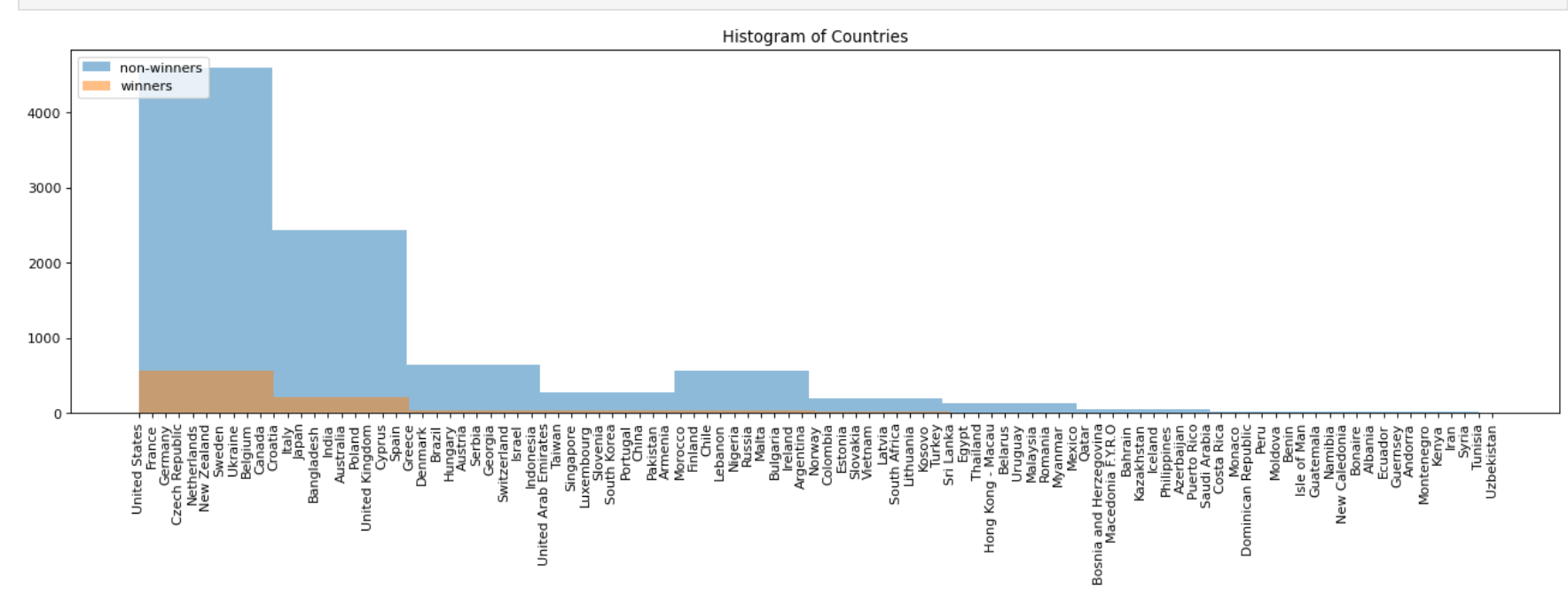
Question 1: How many Unique colors are there in the images?

Helps answer the question: Do more colors have an impact on likelihood to win an award?

```
from matplotlib import pyplot
%matplotlib inline

pyplot.hist(cmb_df_2[(cmb_df_2.winner == 0)]['unique_color_count_50'], label = 'non-winners', alpha=0.5)
pyplot.hist(cmb_df_2[(cmb_df_2.winner == 1)]['unique_color_count_50'], label = 'winners', alpha=0.5)
pyplot.legend(loc='upper left')
pyplot.title('Histogram of Unique Color Count 50 X 50 ')

pyplot.show()
```




```
from matplotlib.pyplot import figure
figure(figsize=(20, 5), dpi=80)
pyplot.hist(cmb_df_2[(cmb_df_2.winner == 0)]['country'], label = 'non-winners', alpha=0.5)
pyplot.hist(cmb_df_2[(cmb_df_2.winner == 1)]['country'], label = 'winners', alpha=0.5)
pyplot.legend(loc='upper left')
pyplot.title('Histogram of Countries')
pyplot.xticks(rotation = 90)
pyplot.show()
```



What is the average color of the images?

```
n = 0
for i, row in cmb_df_2.iterrows():
    filename = row[0]
    try:
        img = Image.open(directory3+filename+'.jpg')
        if img is not None:
            img_temp = img.copy()
            colors = np.average(img, axis=(0,1))
            colors[0] = round((colors[0]/256),0)
            colors[1] = round((colors[1]/256),0)
            colors[2] = round((colors[2]/256),0)
            hex_val = matplotlib.colors.to_hex([colors[0],colors[1],colors[2]])
            cmb_df_2.at[i,'average_color'] = hex_val
    except:
        n = n+1

print("errors: "+str(n))
```

```
errors: 0
```

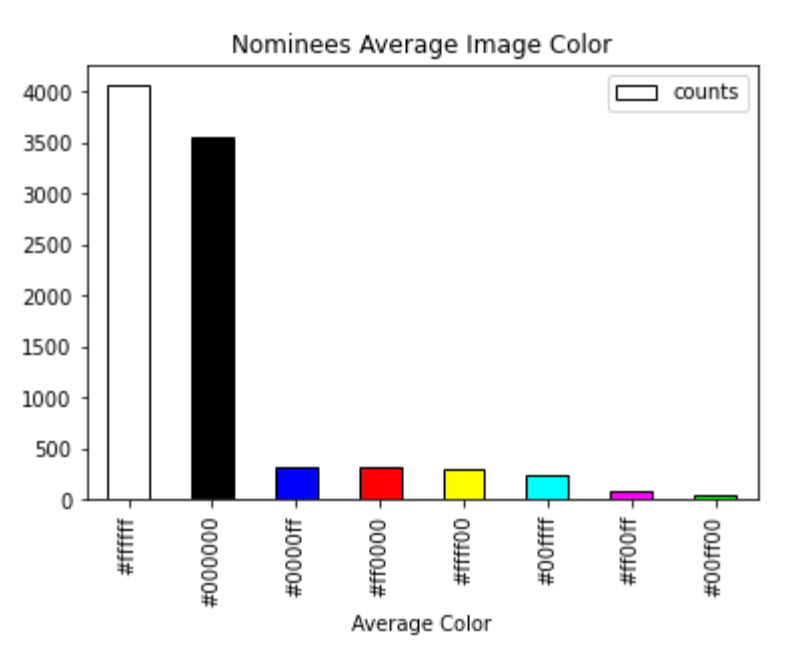
Getting Most Frequent Color by Clustr

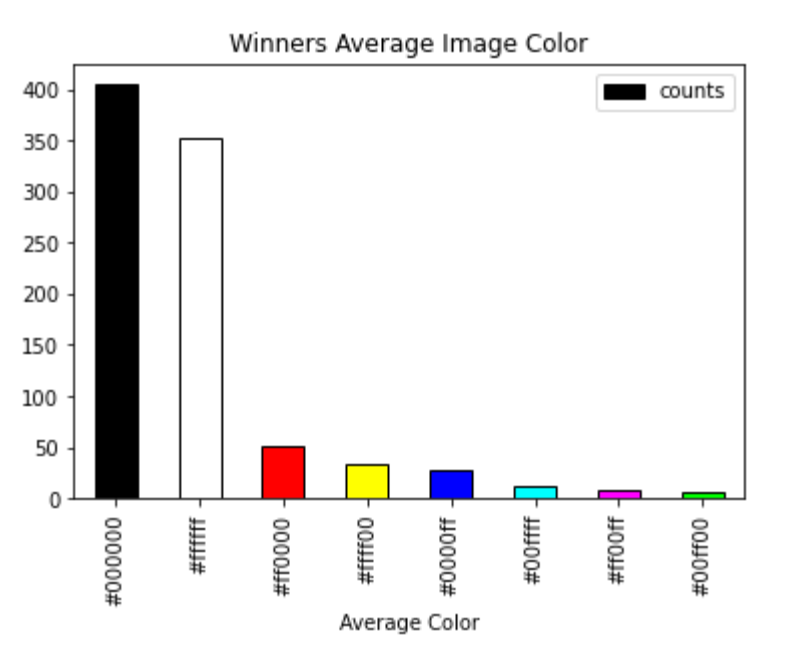
```
from colorthief import ColorThief

n = 0
n2 = 0
for i, row in cmb_df_2.iterrows():
    filename = row[0]
    try:
        img = Image.open(directory3+filename+'.jpg')
        if img is not None:
            img = img.convert('RGB')
            color_thief = ColorThief(directory3+filename+'.jpg')
            colors = color_thief.get_color(quality=1)
            colors = list(colors)
            colors[0] = round((colors[0]/256),0)

            colors[1] = round((colors[1]/256),0)
            colors[2] = round((colors[2]/256),0)
            hex_val = matplotlib.colors.to_hex([colors[0],colors[1],colors[2]])
            cmb_df_2.at[i,'dominant_color'] = hex_val
            n2 = n2+1
    except:
        n = n+1

print("errors: "+str(n))
print("Records Udpated: "+ str(n2))
```

```
errors: 0
Records Udpated: 9815
```

```
avg_non = cmb_df_2[(cmb_df_2.winner == 0)]
avg_win = cmb_df_2[(cmb_df_2.winner == 1)]

avg_colors_non = avg_non['average_color'].value_counts().rename_axis('Average Color').reset_index(name='counts'
avg_colors_win = dom_win['average_color'].value_counts().rename_axis('Average Color').reset_index(name='counts'
colors_nom = avg_colors_non['Average Color']
colors_win = avg_colors_win['Average Color']
avg_colors_non.plot.bar(x='Average Color',y='counts',color= colors_nom,  edgecolor = 'black', title= 'Nominees
avg_colors_win.plot.bar(x='Average Color',y='counts',color= colors_win,  edgecolor = 'black', title= 'Winners A
```

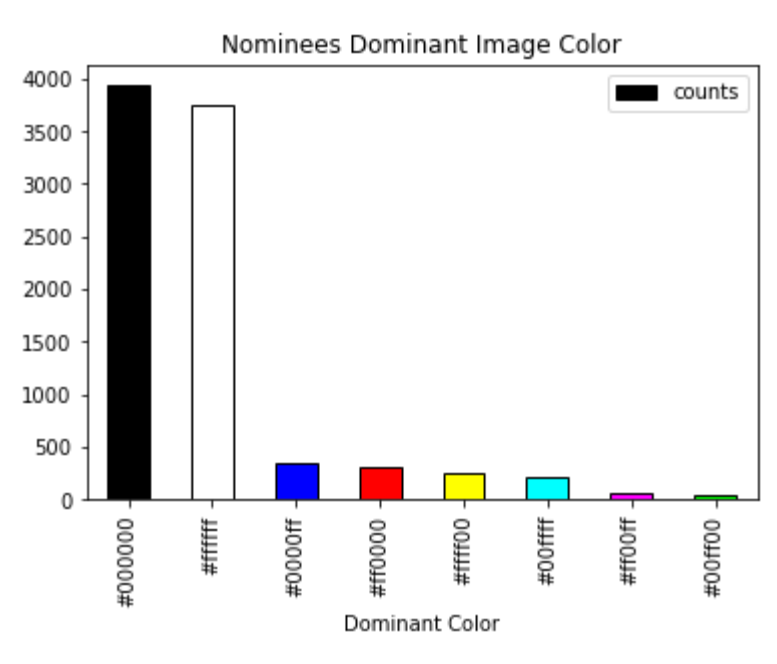
```
<AxesSubplot:title={'center':'Winners Average Image Color'}, xlabel='Average Color'>
```

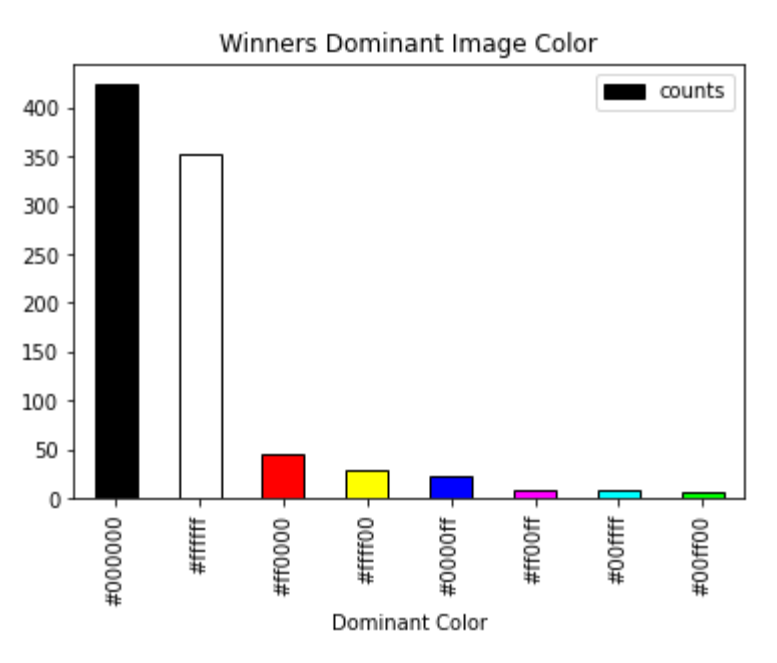





```
dom_non = cmb_df_2[(cmb_df_2.winner == 0)]
dom_win = cmb_df_2[(cmb_df_2.winner == 1)]

dom_colors_non = dom_non['dominant_color'].value_counts().rename_axis('Dominant Color').reset_index(name='count
dom_colors_win = dom_win['dominant_color'].value_counts().rename_axis('Dominant Color').reset_index(name='count
colors_nom = dom_colors_non['Dominant Color']
colors_win = dom_colors_win['Dominant Color']
dom_colors_non.plot.bar(x='Dominant Color',y='counts',color= colors_nom,  edgecolor = 'black', title= 'Nominees
dom_colors_win.plot.bar(x='Dominant Color',y='counts',color= colors_win,  edgecolor = 'black', title= 'Winners
```

```
<AxesSubplot:title={'center':'Winners Dominant Image Color'}, xlabel='Dominant Color'>
```





Save work to CSV to save time for future work

```
cmb_df_2.to_csv('savedwork.csv',index=False)
```