COGS 108 Week 7

Adapted from slides in COGS 108 FA23 Week 7

LOGISTICS

DUE DATES

- Data checkpoint due Wednesday, 11/13
- D6 due Friday, 11/15

DISCUSSION

LAB 6

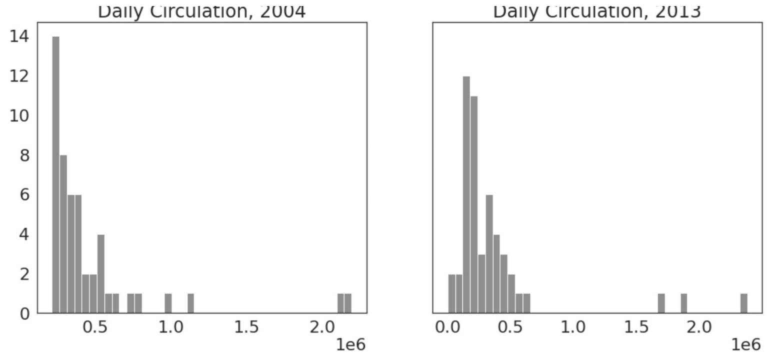
INFERENTIAL ANALYSIS

Get rid of the commas in the numbers for Daily Circulation:

df['Series'].str.replace(str).astype(float)

#Look at daily circulation distribution in 2004 and in 2013

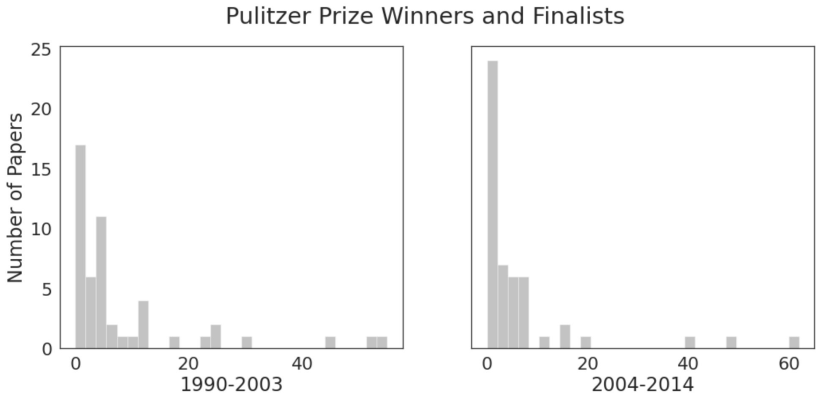
Plot using sns.histplot(). Parameters used for plot below: bins=40.



Let's look at the distribution of Pulitzer prize winners for the same time period.

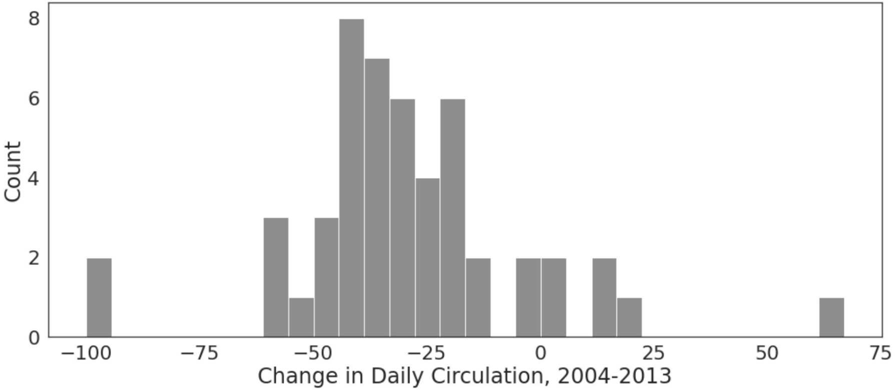
Plot using sns.histplot()
Parameters used for plot below: bins=30.

```
fig, (ax1, ax2) = plt.subplots(ncols=2, sharey=True)
sns.histplot(....)
ax1.set_title(...)
sns.histplot(....)
ax2.set_title(...)
```



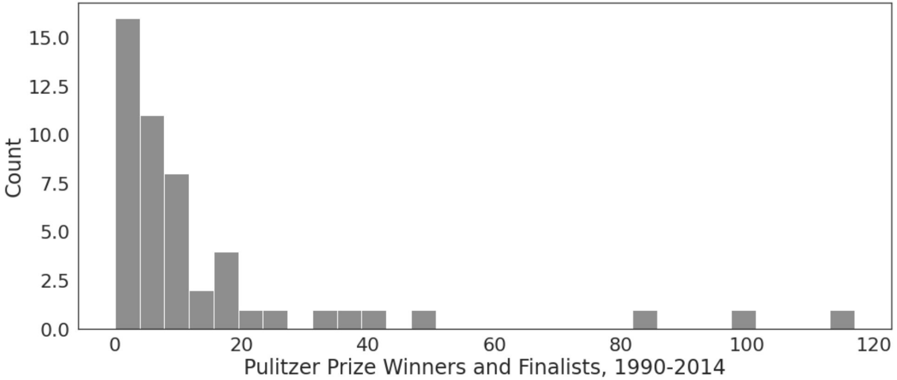
Plot the distribution of "change" in daily circulation:

Plot using sns.histplot(),
parameters used for plot below: kde=False, bins=30, color="dimgrey"

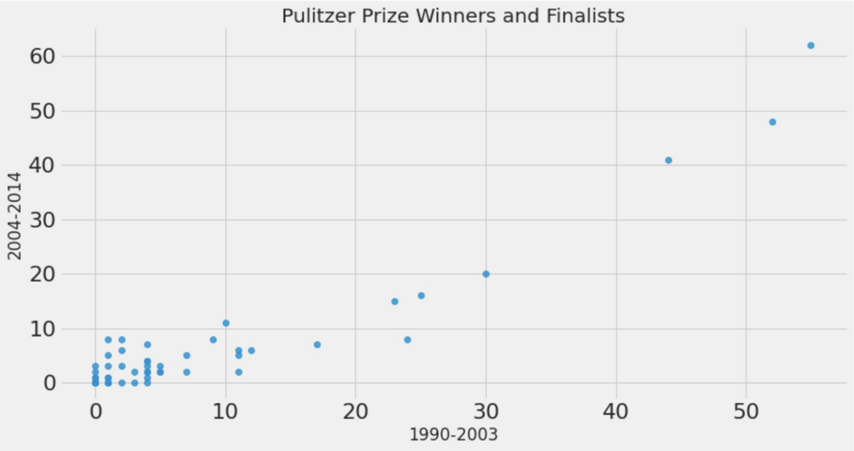


Look at pulitzer prize winner distributions:

Plot using sns.histplot()

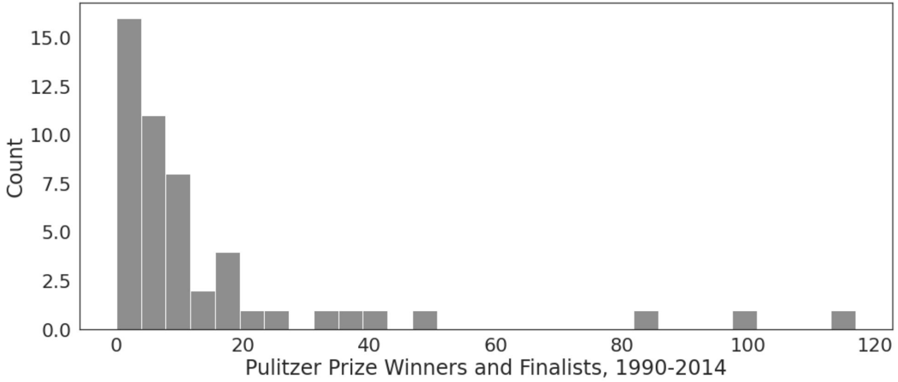


# plot relationship between pulitzer prize winners/finalists in each time period and look at number of pulitzers between two time periods
Plot using sns.lmplot(x = 'Series1', y = 'Series2',data = DataframeName, fit_reg = False, height = 6, aspect=2)



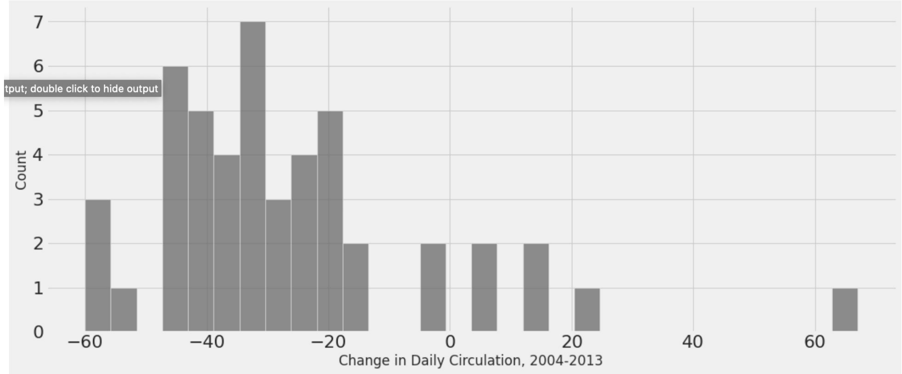
In the cell below look at pulitzer prize winner distributions

Plot using sns.histplot()



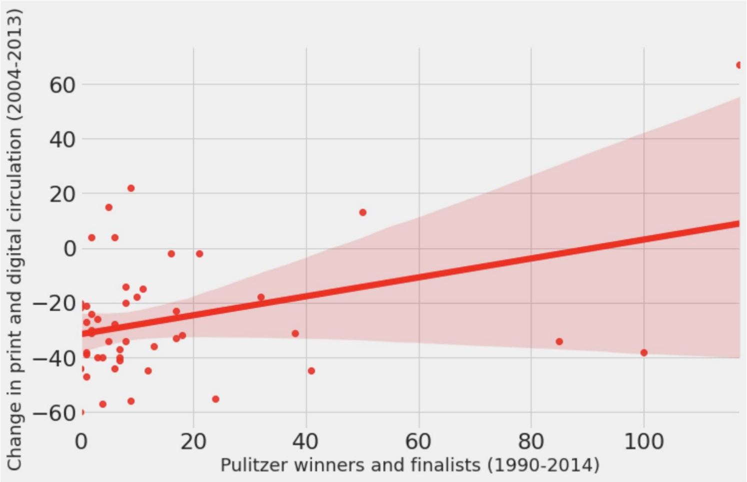
#Who has won the most pulitzers during the years we're looking at?
Use sort_values() to look at the top values
Parameter: ascending = False

#Plot the distribution of daily change in circulation after outlier removal



#Relationship between the total number of Pulitzers and change in readership (daily circulation)

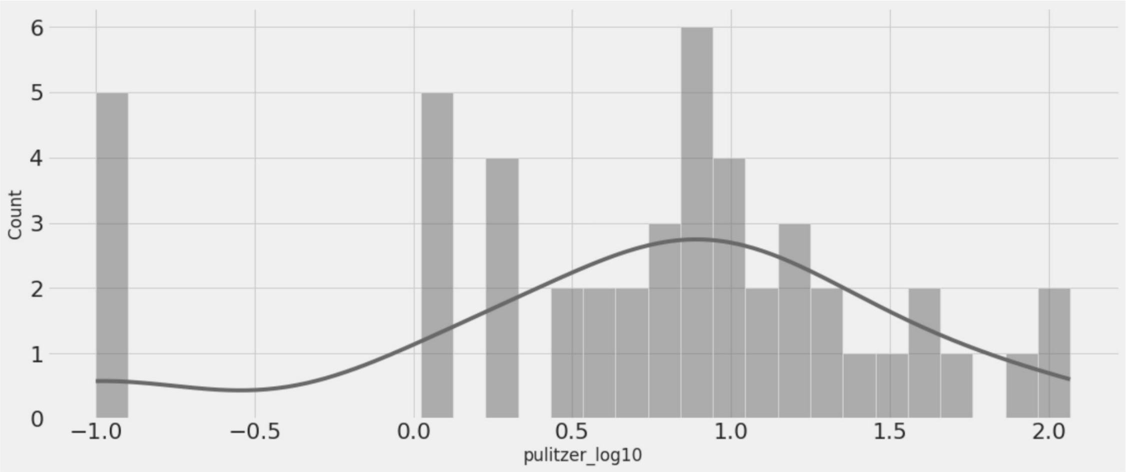
Use sns.lmplot(x = 'Series1', y = 'Series2', data = dataFrameName, fit_reg = True,
height = 6, aspect = 1.7, line_kws={'color': 'red'}, scatter_kws={'color': 'red'})



#Apply a log10-transformation the Pulitzer count data, with an offset of 0.1

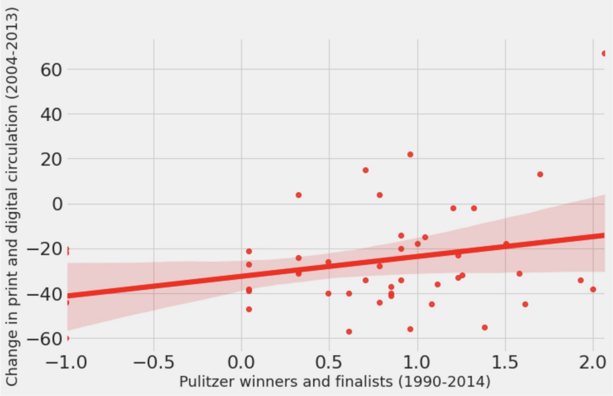
Use pulitzer[‘pulitzer_log10’] = np.log10 (Series +0.1)

#In the next cell, visualize the distribution of the log10 column
Use sns.histplot()



#plot the relationship between our two variables of interest

Use sns.lmplot()



#Carry out linear regression; Now use statsmodels to initialize an OLS linear model This step initializes the model, and provides the data (but does not actually compute the model); fit the model; and Check out the results.

```
df = pulitzer[['Change in Daily Circulation, 2004-2013',
                    'pulitzer_log10']]
df.columns = ['circulation', 'pulitzer_log10']
df.head()

outcome, predictors = patsy.dmatrices('circulation ~ pulitzer_log10', df)

# Now use statsmodels to initialize an OLS linear model
#  This step initializes the model, and provides the data (but does not actually compute the model)
mod_log = sm.OLS(outcome, predictors)

# fit the model
res_log = mod_log.fit()

# Check out the results
print(res_log.summary())
```

#Carry out linear regression => (A modern way) Fit the model; and Check out the results.

```
df = pulitzer[['Change in Daily Circulation, 2004-2013',
                        'pulitzer_log10']]
df.columns = ['circulation', 'pulitzer_log10']
df.head()

# We can use statsmodels.formula.api to run this linear regression without patsy

# Go back up to the first cell and ‘import statsmodels.formula.api as smf’

# This step initializes the model, and provides the data (but does not actually compute the model)
mod_log = smf.ols(formula=‘circulation ~ pulitzer_log10’, data=df)

# fit the model
res_log = mod_log.fit()

# Check out the results
print(res_log.summary())
```

THANKS!

Questions on Edstem or office hours

Someone literally bought a domain to do this

You spelled it wrong.

CREDITS: This presentation template was created by **Slidesgo**, including icons by **Flaticon** and infographics & images by **Freepik**