

nypd-2

November 12, 2021

1 NYPD Civilian Complaints

2 Summary of Findings

2.0.1 Introduction

The dataset we chose to investigate in this project contains data about 12,000 civilian complaints against New York City police officers from September 1985 to January 2020. This dataset contains a lot of details about each complaint such as the officers ID, rank at the time of the complaint and present rank, category of alleged misconduct, and a description of the misconduct as well.

We had a look at the suggested questions provided and were drawn to the question concerning whether the complaints of women are more successful than men (for the same allegations). This dataset is perfect to answer this question since it contains all the information we need to come to a conclusion, like the gender of the complainant, allegation, and outcome. We decided that a successful complaint would be when the `board_disposition` outcome of the complaint is 'Substantiated'.

After having a look at the dataset, we came up with another question we were interested in: Are white-officers more likely to be exonerated or unsubstantiated? We were particularly interested in observing whether white-officers are more likely to get off the hook for a complaint. We simply observing whether there the chance of a white officer getting off the hook is more likely than officers of other ethnicities and not making any conclusions about the causes since we have no proof as to whether the complaint / allegation made is true or false.

2.0.2 Cleaning and EDA

Our initial approach was to first create a datetime column as mentioned in the instructions to find some pattern. We used `getting_df` function to do so. However, we quickly realised that our questions do not have any relationship with time, so we quickly moved on to clean the data in different way.

To answer the questions we shortlisted, we went to each column of interest and first identified whether there were null values present. We found that there was only one null value in the 'allegation' column and we dropped this row of complaints since it is difficult to classify it if the value is null. We conducted the same checks for the other columns like 'complainant_gender', 'mos_ethnicity' and 'board_disposition' and dropped the rows with null values present.

To further clean the dataset and better answer our questions, we decided to further clean up the 'allegation' column since there were a number of similar values with just a small difference in upper or lower case or slightly different wording. For example, we found that there were a number of allegations called 'Person Searched' and 'Search (of person)' which are the same thing. We designed

a helper method called `allegation_cleaner` to apply to the `allegation` column and clean it up and better categorise allegations that are similar. After applying this function, the number of unique values in the column went from 115 to 19. Since we are comparing the male and female complaint success rates for each allegation, it is important to have a larger group of complaints which fall under a specific allegation otherwise it can create a flawed method of comparison when conducting the permutation test. We created a similar method to clean up the `'board_disposition'` column since there were many unique values which all fell under the category of 'Substantiated'.

To clean the data and answer our first question, we dropped all rows where the gender did not match 'Male' or 'Female' since our question is specifically investigating the difference in complaint success rates between males and females.

2.0.3 Assessment of Missingness

We conducted two permutation tests to assess the missingness of columns in our dataset. We were not able to find any columns which had their missingness dependent on another column. Moreover, to answer our questions, we only needed 4 columns: `complainant_gender`, `mos_ethnicity`, `allegation`, and `board_disposition`.

We felt that the `complainant_gender` was MAR, and the other columns did not have enough missing values to successfully determine what type of missingness they are.

The first permutation test we conducted was to check whether the missingness of the `complainant_gender` column depended on `board_disposition`. We decided to conduct the test with a significance level of 0.05. Our test resulted in a p-value of 0, so we came to the conclusion that the missingness of `complainant_gender` is not dependent on `board_disposition`.

The second permutation test we conducted was to check whether the missingness of the `complainant_gender` column depended on `mos_gender` (officer's gender). We decided to conduct the test with a significance level of 0.05. Our test resulted in a p-value of 0.83, which is much larger than 0.05, so we came to the conclusion that the missingness of `complainant_gender` does depend on `mos_gender` (officer's gender). This could be because male officers might have made females uncomfortable and scared of adding their gender on the complaint to prevent themselves from being identified.

2.0.4 Hypothesis Test

Question 1: Are the complaints of women more successful than men (for the same allegations)? We consider a complaint as successful when the `board_disposition` is 'Substantiated'.

- Null Hypothesis: Complaints of women have the same success rate as that of men.
- Alternative Hypothesis: Complaints of women are more successful (higher in proportion) than that of men.
- Test Statistic: We are summing the difference in proportions of substantiated complaints between men and women for each allegation

We are conducting the permutation test with a significance level of 0.05.

From the permutation test we conducted, we found a p-value of 0.291, so we fail to reject the null hypothesis and cannot conclude that there is a significant difference in success rates between men and women for each allegation.

Question 2: Are white-officers more likely to be exonerated or unsubstantiated?

- Null Hypothesis: White officers are equally likely to be exonerated or unsubstantiated.
- Alternative Hypothesis: White officers more likely to be exonerated or unsubstantiated.
- Test Statistic: Average difference between white officers exonerated/unsubstantiated and non-white officers exonerated/unsubstantiated

We are conducting the permutation test with a significance level of 0.05.

Our permutation test resulted in a p-value of 0, so we can confidently reject the null hypothesis that white-officers are equally likely to be exonerated or unsubstantiated. This could suggest that the board may be biased towards white-officers when deciding if the allegation is true or not. There could also be some confounding factors that we are not aware of.

3 Code

```
[1]: import matplotlib.pyplot as plt
import numpy as np
import os
import pandas as pd
import seaborn as sns
%matplotlib inline
%config InlineBackend.figure_format = 'retina' # Higher resolution figures
```

3.0.1 Cleaning and EDA

```
[2]: # Reading the dataset on civilian complaints from csv to pandas Dataframe.
nypd = pd.read_csv('allegations_202007271729.csv')
# Renaming 'unique_mos_id' to 'officer_id' for better readability
nypd.rename(columns={'unique_mos_id': 'officer_id'}, inplace=True)
```

```
[3]: # Getting summary of data
nypd.describe()
```

```
[3]:
```

	officer_id	shield_no	complaint_id	month_received	\
count	33358.000000	33358.000000	33358.000000	33358.000000	
mean	18169.912495	6451.608819	23905.058217	6.323551	
std	9566.316896	7945.641596	11954.434138	3.362951	
min	2.000000	0.000000	517.000000	1.000000	
25%	9671.000000	1089.000000	13684.750000	3.000000	
50%	19215.000000	3691.000000	25132.000000	6.000000	
75%	25412.000000	7155.000000	34252.000000	9.000000	
max	36374.000000	31977.000000	43703.000000	12.000000	

	year_received	month_closed	year_closed	mos_age_incident	\
count	33358.000000	33358.000000	33358.000000	33358.000000	
mean	2010.726782	6.470772	2011.525661	32.346873	

std	6.034725	3.343372	6.085907	6.040944
min	1985.000000	1.000000	1985.000000	20.000000
25%	2007.000000	4.000000	2008.000000	28.000000
50%	2012.000000	6.000000	2013.000000	31.000000
75%	2016.000000	9.000000	2016.000000	36.000000
max	2020.000000	12.000000	2020.000000	60.000000

	complainant_age_incident	precinct
count	28546.000000	33334.000000
mean	32.484201	64.365213
std	28.408963	31.451592
min	-4301.000000	0.000000
25%	23.000000	43.000000
50%	30.000000	67.000000
75%	41.000000	81.000000
max	101.000000	1000.000000

```
[4]: # Created function to get the range from month received to month closed
#Can be useful for time-series exploration
def getting_tf(df):
    month = 12
    received = month - df['month_received']
    closed = df['month_closed']
    year_diff = (df['year_closed'] - df['year_received']) * 12
    df['Date Time (Month)'] = year_diff + received + closed
```

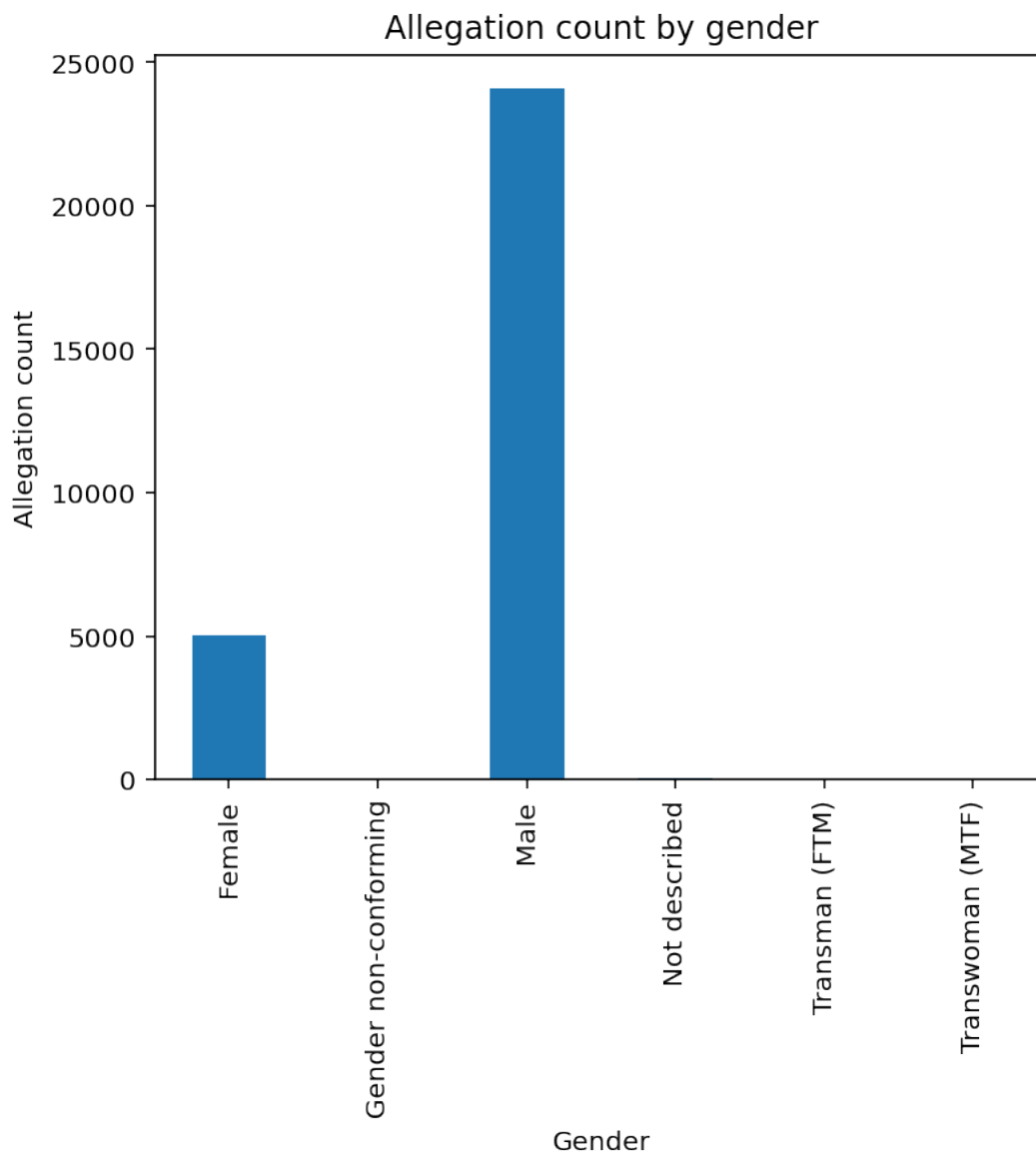
```
[5]: # Checking how many allegations were made by each gender
nypd.groupby('complainant_gender').count()['allegation']
```

```
[5]: complainant_gender
Female                    5021
Gender non-conforming      2
Male                    24058
Not described              57
Transman (FTM)             5
Transwoman (MTF)          20
Name: allegation, dtype: int64
```

```
[6]: # Plotting the difference in number of allegations by different genders
dfg = nypd.groupby(['complainant_gender'])['allegation'].count()

dfg.plot(kind='bar', title='Allegation count by gender', ylabel='Allegation_
→count',
        xlabel='Gender', figsize=(6, 5))
```

```
[6]: <AxesSubplot:title={'center':'Allegation count by gender'}, xlabel='Gender',
ylabel='Allegation count'>
```



```
[7]: # Checking proportion of male successful complaints
nypd[(nypd['complainant_gender'] == 'Male') & (nypd['board_disposition'] == 'Substantiated')].shape[0] / nypd[nypd['complainant_gender'] == 'Male'].shape[0]
```

```
[7]: 0.0
```

```
[8]: # Checking proportion of female successful complaints
nypd[(nypd['complainant_gender'] == 'Female') & (nypd['board_disposition'] == 'Substantiated')].shape[0] / nypd[nypd['complainant_gender'] == 'Female'].shape[0]
```

```
[8]: 0.0
```

The fact that females have a lower proportion of complaints succesful overall compared to men does not signify anything because our question is asking whether there is a difference in success rates for each allegation.

```
[9]: # Getting number of nan values in allegation column  
nypd['allegation'].isna().value_counts()
```

```
[9]: False    33357  
     True      1  
     Name: allegation, dtype: int64
```

```
[10]: # Getting number of nan values in complainant_gender column  
nypd['complainant_gender'].isna().value_counts()
```

```
[10]: False    29163  
      True     4195  
      Name: complainant_gender, dtype: int64
```

```
[11]: # Getting number of nan values in board_disposition column  
nypd['board_disposition'].isna().value_counts()
```

```
[11]: False    33358  
      Name: board_disposition, dtype: int64
```

```
[12]: # Getting number of nan values in mos_ethnicity column  
nypd['mos_ethnicity'].isna().value_counts()
```

```
[12]: False    33358  
      Name: mos_ethnicity, dtype: int64
```

Cleaning up the data and removing all rows where data in the columns we are interested in are missing / null:

```
[13]: # Removing rows where complainant gender is missing (Nan)  
# Removing rows where allegation is missing (Nan)  
# Removing rows where board_disposition is missing (Nan)  
# Removing rows where mos_ethnicity is missing (Nan)  
  
nypd = nypd[nypd['complainant_gender'].notna()]  
nypd = nypd[nypd['allegation'].notna()]  
nypd = nypd[nypd['board_disposition'].notna()]  
nypd = nypd[nypd['mos_ethnicity'].notna()]
```

This is a helper method to clean the allegation column and reduce the number of unique values to better answer our question (q1). Reduces number of unique values in allegation column from 115 to 19.

```

[14]: def allegation_cleaner(x):
    racial_words = ['white', 'black', 'asian', 'ethnic', 'race', 'oriental',
↳ 'hispanic', 'mexican', 'indian', 'jewish', 'racial', 'immigration', 'gay',
↳ 'gender', 'religion']
    physical_force_words = ['force', 'mace', 'club', 'restricted', 'slap',
↳ 'push', 'kick', 'punch', 'shove', 'choke', 'pepper', 'dragged', 'beat',
↳ 'tight', 'restrain', 'forcible', 'hit', 'damage']
    if 'sex' in str(x).lower():
        return 'Sexual Misconduct'
    elif any([force_word in str(x).lower() for force_word in
↳ physical_force_words]):
        return 'Unnecessary Physical Force'
    elif any([word in str(x).lower() for word in racial_words]):
        return 'Discrimination / Bias'
    elif ('drawn' in str(x).lower()) or ('pointed' in str(x).lower()):
        return 'Gun Pointed'
    elif ('threat of force' in str(x).lower()) or ('threat' in str(x).lower()):
        return 'Threat of Force (verbal or physical)'
    elif ('threat of force' in str(x).lower()):
        return 'Threat of Force (verbal or physical)'
    elif ('threat of force' in str(x).lower()):
        return 'Threat of Force (verbal or physical)'
    elif ('word' in str(x).lower()) or ('curse' in str(x).lower()) or ('abuse'
↳ in str(x).lower()) or ('question' in str(x).lower()):
        return 'Verbal Abuse'
    elif ('frisk' in str(x).lower()) or ('search (of person)' in str(x).
↳ lower()) or ('person searched' in str(x).lower()):
        return 'Frisk'
    elif ('vehicle' in str(x).lower()) or ('stop' in str(x).lower()):
        return 'Vehicle (Search or Stop)'
    elif ('premise' in str(x).lower()):
        return 'Premises entered and/or searched'
    elif ('fired' in str(x).lower()):
        return 'Gun Fired'
    elif ('demeanor' in str(x).lower()) or ('gesture' in str(x).lower()) or
↳ ('action' in str(x).lower()) or ('discourtesy' in str(x).lower()):
        return 'Discourtesy / Rude'
    elif ('refusal' in str(x).lower()) or ('deletion' in str(x).lower()) or
↳ ('interference' in str(x).lower()) or ('retaliatory' in str(x).lower()) or
↳ ('dissemination' in str(x).lower()) or ('rtka' in str(x).lower()) or
↳ ('interpretation' in str(x).lower()):
        return 'Rules for arrest not followed'
    elif ('strip' in str(x).lower()) or ('cavity' in str(x).lower()):
        return 'Strip-searched'
    else:
        return x

```

```
nypd['allegation'] = nypd['allegation'].apply(allegation_cleaner)
```

```
[15]: # Cleaning board disposition column

def board_disposition_cleaner(x):
    if 'unsubstantiated' in str(x).lower():
        return 'Unsubstantiated'
    elif 'exonerated' in str(x).lower():
        return 'Exonerated'
    else:
        return 'Substantiated'

nypd['board_disposition'] = nypd['board_disposition'].
    ↪ apply(board_disposition_cleaner)
```

```
[16]: # Checking number of different board_disposition outcomes for each gender after
    ↪ cleaning up board_disposition column

nypd.pivot_table(index='complainant_gender', columns='board_disposition',
    ↪ aggfunc='size')
```

board_disposition	Exonerated	Substantiated	Unsubstantiated
complainant_gender			
Female	1415.0	1032.0	2574.0
Gender non-conforming	NaN	2.0	NaN
Male	6571.0	6151.0	11336.0
Not described	21.0	14.0	22.0
Transman (FTM)	NaN	2.0	3.0
Transwoman (MTF)	4.0	11.0	5.0

Creating new dataframe with complaints only from men and women to help us answer the question regarding male and female complaint success rates.

```
[17]: # Creating new dataframe with complaints only from men and women
only_m_and_f = nypd[(nypd['complainant_gender'] == 'Male') |
    ↪ (nypd['complainant_gender'] == 'Female')]
```

3.0.2 Assessment of Missingness

We checked our columns of interest (gender, allegation, ethnicity, and board_disposition for missingness in the Data Cleaning section and dropped all rows with NaN values.

```
[18]: # Getting sum of NaN values in each column
nypd.isnull().sum(axis = 0)
```



```
[18]: officer_id          0
      first_name         0
      last_name          0
      command_now        0
      shield_no          0
      complaint_id       0
      month_received      0
      year_received       0
      month_closed        0
      year_closed         0
      command_at_incident 142
      rank_abbrev_incident 0
      rank_abbrev_now     0
      rank_now            0
      rank_incident       0
      mos_ethnicity       0
      mos_gender          0
      mos_age_incident    0
      complainant_ethnicity 288
      complainant_gender  0
      complainant_age_incident 680
      fado_type           0
      allegation          0
      precinct            19
      contact_reason      140
      outcome_description  45
      board_disposition    0
      dtype: int64
```

Conducting a permutation test to assess whether the missingness of the gender column is dependent on board_disposition:

```
[19]: mcar_nypd = nypd[['complainant_gender', 'board_disposition', 'allegation']]
      distr = (
          mcar_nypd
          .assign(is_null=mcar_nypd['complainant_gender'].isnull())
          .pivot_table(index='is_null', columns='board_disposition', aggfunc='size')
      )
      distr = (distr.T / distr.sum(axis=1)).T

      n_repetitions = 100

      tvds = []
      for _ in range(n_repetitions):

          # shuffle the board_disposition column
          shuffled_col = (
```

```

    mcar_nypd['board_disposition']
    .sample(replace=False, frac=1)
    .reset_index(drop=True)
)

# put them in a table
shuffled = (
    mcar_nypd
    .assign(**{
        'board_disposition': shuffled_col,
        'is_null': mcar_nypd['complainant_gender'].isnull()
    })
)

# compute the tvd
shuffled = (
    shuffled
    .pivot_table(index='is_null', columns='board_disposition',
    ↪aggfunc='size')
    .apply(lambda x:x / x.sum(), axis=1)
)

tvd = shuffled.diff().iloc[-1].abs().sum() / 2
# add it to the list of results
tvds.append(tvd)

obs = distr.diff().iloc[-1].abs().sum() / 2

# Calculating pvalue
pval = np.mean(tvds > obs)
pval

```

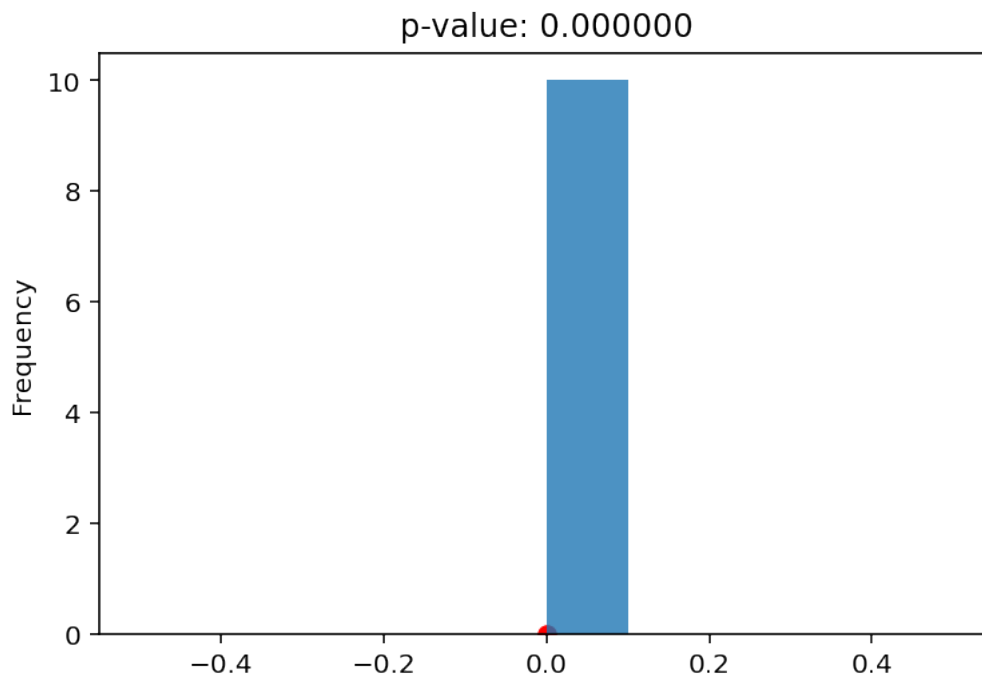
[19]: 0.0

```

[20]: # Plotting graph to visualize p-value

pd.Series(tvds).plot(kind='hist', density=True, alpha=0.8, title='p-value: %f'
    ↪% pval)
plt.scatter(obs, 0, color='red', s=40);

```



Conclusion Since the p value we obtained is 0, we can conclude that the missingness of the complainant_gender column is not dependent on board_disposition.

Conducting a permutation test to assess whether the missingness of the gender column is dependent on the officers gender:

```
[21]: mcar2_nypd = nypd[['complainant_gender', 'board_disposition', 'allegation',
    ↪ 'mos_gender']]
distr = (
    mcar2_nypd
    .assign(is_null=mcar2_nypd['complainant_gender'].isnull())
    .pivot_table(index='is_null', columns='mos_gender', aggfunc='size')
)
distr = (distr.T / distr.sum(axis=1)).T
distr

n_repetitions = 100

tvds = []
for _ in range(n_repetitions):

    # shuffle the board_disposition column
    shuffled_col = (
        mcar2_nypd['allegation']
```

```

        .sample(replace=False, frac=1)
        .reset_index(drop=True)
    )

    # put them in a table
    shuffled = (
        mcar2_nypd
        .assign(**{
            'mos_gender': shuffled_col,
            'is_null': mcar2_nypd['complainant_gender'].isnull()
        })
    )

    # compute the tvd
    shuffled = (
        shuffled
        .pivot_table(index='is_null', columns='mos_gender', aggfunc='size')
        .apply(lambda x: x / x.sum(), axis=1)
    )

    tvd = shuffled.diff().iloc[-1].abs().sum() / 2
    # add it to the list of results

    tvds.append(tvd)

obs = distr.diff().iloc[-1].abs().sum() / 2

# Calculating p-value
pval = np.mean(tvds > obs)
pval

```

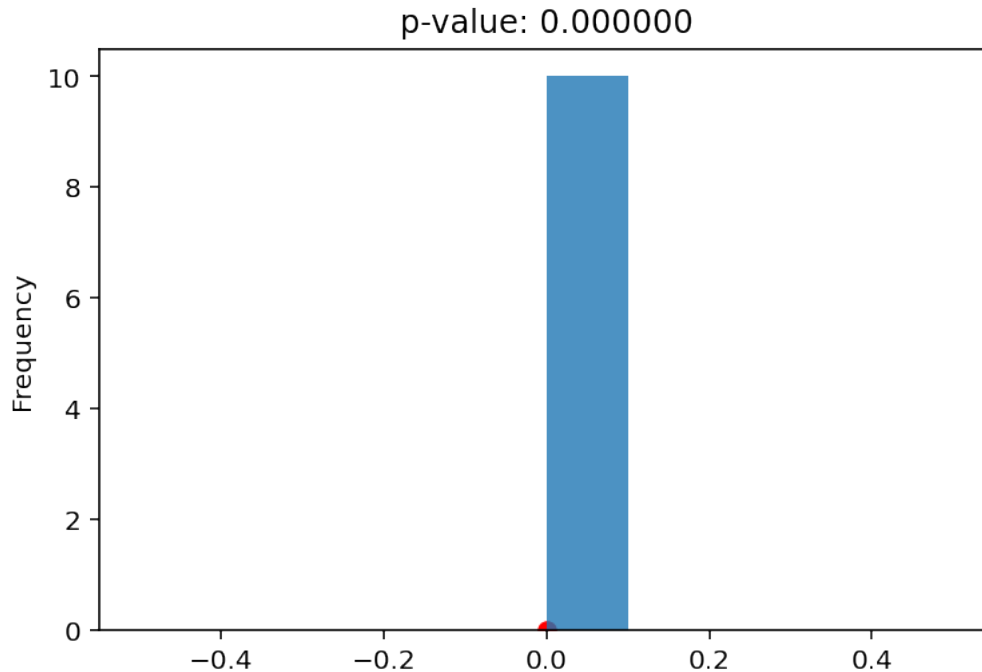
[21]: 0.0

```

[22]: # Plotting graph to visualize p-value

pd.Series(tvds).plot(kind='hist', density=True, alpha=0.8, title='p-value: %f' % pval)
plt.scatter(obs, 0, color='red', s=40);

```



Conclusion Since the p value we obtained is again 0.83, we can conclude that the missingness of complainant_gender does depend on officer's gender. Some civilians who made a complaint may have chosen to left the gender column blank to avoid being identified.

3.0.3 Hypothesis Test

3.0.4 Question 1: Permutation test

Are the complaints of women more successful than men (for the same allegations)?

Conducting a permutation test to check if females have more succesful complaint outcomes than men for each allegation We decided on the test statistic which sums the difference in proportions because this made sense to us and we were able to group by each allegation and then compare the difference in proportions.

Calculating observed value for question 1:

```
[23]: # Calculating total diff in proportion of succesful complaints for each
      ↪ allegation for males and females and summing the differences

observed_summed_proportion = 0
for allegation in list(only_m_and_f['allegation'].unique()):

    df = only_m_and_f[only_m_and_f['allegation'] == allegation]
    females = df[df['complainant_gender'] == 'Female']
```

```

males = df[df['complainant_gender'] == 'Male']

# making sure there is at least 1 instance of this allegation in male and
→female
if (females.shape[0] > 0 ) and (males.shape[0] > 0 ):
    females_successful_proportion = females[females['board_disposition'] ==
→'Substantiated'].shape[0]/females.shape[0]
    male_successful_proportion = males[males['board_disposition'] ==
→'Substantiated'].shape[0]/males.shape[0]
    # Calculating difference in female success rate - male success rate
    observed_summed_proportion += (females_successful_proportion -
→male_successful_proportion)
else:
    observed_summed_proportion += 0

observed_summed_proportion

```

[23]: 0.36695513209341596

Shuffling and conducting permutation test for question 1:

```

[24]: # Shuffling male and female labels and calculating total diff in proportions by
→conducting a permutation test

N = 1000
means = []
shuffled = only_m_and_f.copy()[['officer_id', 'complaint_id',
→'complainant_gender', 'allegation', 'board_disposition']]
shuffled_genders = shuffled['complainant_gender'].values

for _ in range(N):

    # shuffle the genders
    shuffled_genders = np.random.permutation(shuffled_genders)
    shuffled['complainant_gender'] = shuffled_genders

    summed_means = 0
    for allegation in list(shuffled['allegation'].unique()):

        df = shuffled[shuffled['allegation'] == allegation]
        females = df[df['complainant_gender'] == 'Female']
        males = df[df['complainant_gender'] == 'Male']

        # making sure there is at least 1 instance of this allegation in male
→and female
        if (females.shape[0] > 0 ) and (males.shape[0] > 0 ):

```

```

        females_sucesful_proportion = females[females['board_disposition'] ==
↳ 'Substantiated'].shape[0]/females.shape[0]
        male_sucesful_proportion = males[males['board_disposition'] ==
↳ 'Substantiated'].shape[0]/males.shape[0]
        # Calculating difference in female success rate - male success rate
        summed_means += females_sucesful_proportion -
↳ male_sucesful_proportion
    else:
        summed_means += 0

    means.append(summed_means)

means = pd.Series(means)

```

```
[25]: # Calculating p-value for summed proportion differences compared to observed
```

```

pval_means = (means >= observed_summed_proportion).sum() / N
pval_means

```

```
[25]: 0.282
```

Conclusion: We fail to reject the null hypothesis at the significance level of 0.05 because the p-value is greater than 0.05. Therefore, we cannot conclude that there women are more likely to have a sucesful complaint than males. This might suggest that the board disposition is usually fair and not biased towards women.

3.0.5 Question 2: Permutation test

Are white-officers more likely to be exonerated or unsubstantiated?

Conducting a permutation test to check if white-officers are more likely to get off the hook (exonerated or unsubstantiated) We chose the test statistic which takes the difference in means into consideration because this would clearly highlight whether there is any real difference or not. We also chose this since we are summing the number of white officers and non white officers so our data is quantitative.

```
[26]: #Calculating Total Diff
```

```

nypd_white = nypd[nypd['mos_ethnicity'] == 'White']
nypd_non_white = nypd[nypd['mos_ethnicity'] != 'White']

```

```
[27]: # Calculating observed difference in proportions for non white officers who get
```

```
↳ off the hook
```

```
# and white officers who get off the hook
```

```
test = nypd_white.copy()
```

```

cnt = test.pivot_table(index='mos_ethnicity', columns='board_disposition',
↳ aggfunc='size')

```

```
distr = cnt/test.shape[0] #In proportion
```

```

white = 1 - distr['Substantiated'].iloc[0]

tests = nypd_non_white.copy()
cnts = tests.pivot_table(index='mos_ethnicity', columns='board_disposition',
    ↳aggfunc='size')
distrs = cnts/tests.shape[0] #In proportion
val = 0
for i in distrs['Substantiated']:
    val += i
non_white = 1 - val

observed_mean = white - non_white
observed_mean

```

[27]: 0.013362055475429568

Shuffling and conducting permutation test for question 2:

```

[28]: N = 100
mean = []
shuffle = nypd.copy()[['mos_ethnicity', 'board_disposition']]
shuffle_ethnicity = shuffle['mos_ethnicity'].values

for _ in range(N):
    #Shuffle the ethnicity
    shuffle_ethnicity = np.random.permutation(shuffle_ethnicity)
    shuffle['mos_ethnicity'] = shuffle_ethnicity

    nypd_white = shuffle[shuffle['mos_ethnicity'] == 'White']
    nypd_non_white = shuffle[shuffle['mos_ethnicity'] != 'White'] #this
    ↳includes nan filled with 0 and unknown

    nypd_white_mean = 1 - (nypd_white[nypd_white['board_disposition'] ==
    ↳'Substantiated'].shape[0] / nypd_white.shape[0])
    nypd_non_white_mean = 1 -
    ↳(nypd_non_white[nypd_non_white['board_disposition'] == 'Substantiated'].
    ↳shape[0] / nypd_non_white.shape[0])

    diff = (nypd_white_mean - nypd_non_white_mean)

    mean.append(diff)

mean = pd.Series(mean)

```

```

[29]: # P value
pval_mean = (mean >= observed_mean).sum() / N
pval_mean

```


[29] : 0.0

Conclusion: We strongly reject the null hypothesis because our p-value is lower than 0.05. We can conclude that there is a difference in the number of white-officers who get exonerated or unsubstantiated compared to the non white officers. This goes against are conclusion that the board is probably unbiased from the previous permutation test and suggests that there could be some amount of bias. On the other hand, it is still possible that there are other confounding factors which led us to this result. Moreover, there is also the strong possibility that the dispositions were correct and by coincidence, the white-officers did not do anything wrong and were wrongly accused.