

```
In [52]: import pandas as pd
import numpy as np
import xlwings as xw
import matplotlib.pyplot as plt
```

```
In [53]: df = pd.read_excel("2022 ELECTION PROJECT.xlsx")
df.head()
df.columns
```

Out[53]: Index(['COUNTY', 'TOTAL REGISTERED VOTERS', 'RAILA', 'RUTO', 'MWAURE', 'WAJACKOYA', 'TOTAL VALID VOTES', 'REJECTED BALLOT', 'FAILED TO VOTE'], dtype='object')

```
In [54]: df1 = df.dropna()
```

```
In [55]: df2 = df[['COUNTY', 'RAILA', 'RUTO', 'MWAURE', 'WAJACKOYA', 'TOTAL VALID VOTES', 'REJECTED BALLOT']]
newdf = df2.dropna()
```

```
In [56]: ammended_df = newdf.assign(RAILA_PERCENT =newdf['RAILA']/newdf['TOTAL VALID VOTES']*100, RUTO_PERCENT =newdf['RUTO']/newdf['TOTAL VALID VOTES']*100, MWAURE_PERCENT =newdf['MWAURE']/newdf['TOTAL VALID VOTES']*100, WAJACKOYA_PERCENT =newdf['WAJACKOYA']/newdf['TOTAL VALID VOTES']*100)
```

```
In [57]: ammended_df.head()
```

Out[57]:

	COUNTY	RAILA	RUTO	MWAURE	WAJACKOYA	TOTAL VALID VOTES	REJECTED BALLOT	RAILA_PERCENT	RUTO_PERCENT	MWAURE_PERCENT	WAJACKOYA_PERCENT
0	Mombasa	161015.0	113700.0	482.0	2104.0	277301.0	3812.0	58.065063	41.002376	0.173818	0.000759
1	Kwale	125541.0	51918.0	413.0	1137.0	179009.0	1359.0	70.131111	29.003011	0.230715	0.000754
2	Kilifi	204536.0	77331.0	1067.0	2552.0	285486.0	3191.0	71.644844	27.087493	0.373749	0.001118
3	Tana River	51390.0	41505.0	198.0	412.0	93505.0	1068.0	54.959628	44.388001	0.211753	0.001133
4	Lamu	26160.0	22876.0	186.0	848.0	50070.0	887.0	52.246854	45.688037	0.371480	0.001762

```
In [58]: candidate_percentage = ammended_df[['COUNTY', 'RAILA_PERCENT', 'RUTO_PERCENT', 'MWAURE_PERCENT', 'WAJACKOYA_PERCENT', 'SPOILT_PERCENT']]
```

```
In [59]: round(candidate_percentage, 2).head()
```

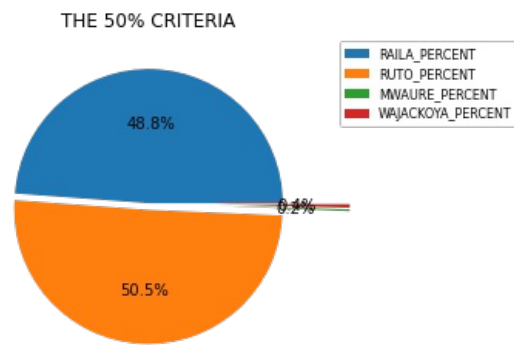
Out[59]:

	COUNTY	RAILA_PERCENT	RUTO_PERCENT	MWAURE_PERCENT	WAJACKOYA_PERCENT	SPOILT_PERCENT
0	Mombasa	58.07	41.00	0.17	0.76	1.37
1	Kwale	70.13	29.00	0.23	0.64	0.76
2	Kilifi	71.64	27.09	0.37	0.89	1.12
3	Tana River	54.96	44.39	0.21	0.44	1.14
4	Lamu	52.25	45.69	0.37	1.69	1.77

```
In [60]: wb = xw.Book()
sht = wb.sheets[0]
sht.name = "PIE CHART"
labels = 'RAILA_PERCENT', 'RUTO_PERCENT', 'MWAURE_PERCENT', 'WAJACKOYA_PERCENT'
sizes = [48.85, 50.49, 0.23, 0.44]
explode = (0, 0.05, 0.5, 0.5)
plt.figure(figsize=(10,10), dpi = 400)
fig1, ax1 = plt.subplots()
ax1.pie(sizes,explode=explode,autopct='%1.1f%%')
plt.legend(labels, bbox to anchor= (1.05,1), prop={'size': 8})
plt.title("THE 50% CRITERIA")
plt.show()
sht.pictures.add(
    fig1,
    name="PIE CHART",
    update=True,
    left=sht.range("C4").left,
    top=sht.range("C4").top,
    height= 400,
    width= 400,
```

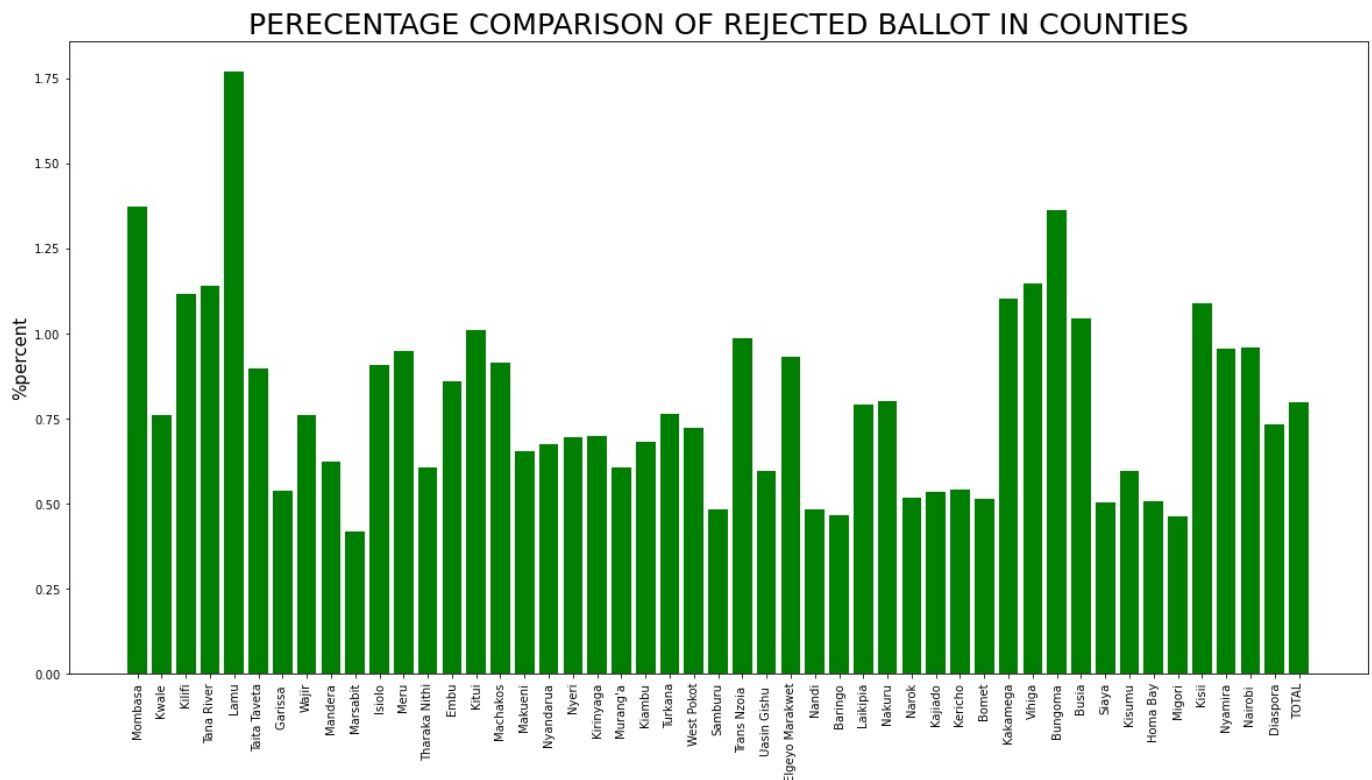
)

<Figure size 4000x4000 with 0 Axes>



Out[60]: <Picture 'PIE CHART' in <Sheet [Book26]PIE CHART>>

```
In [61]: fig = plt.figure(figsize = (20,10))
plt.bar(candidate_percentage['COUNTY'], candidate_percentage['SPOILT_PERCENT'], width = 0.8, color = 'green')
plt.xticks(rotation = 90)
plt.title('PERCENTAGE COMPARISON OF REJECTED BALLOT IN COUNTIES', fontsize = 25)
plt.ylabel('%percent', fontsize = 15)
plt.show()
```



```
In [62]: newdf.loc[50, "RAILA": "WAJACKOYA"]
```

```
Out[62]: RAILA      6942930.0
RUTO      7176091.0
MWAURE      31987.0
WAJACKOYA    61969.0
Name: 50, dtype: object
```

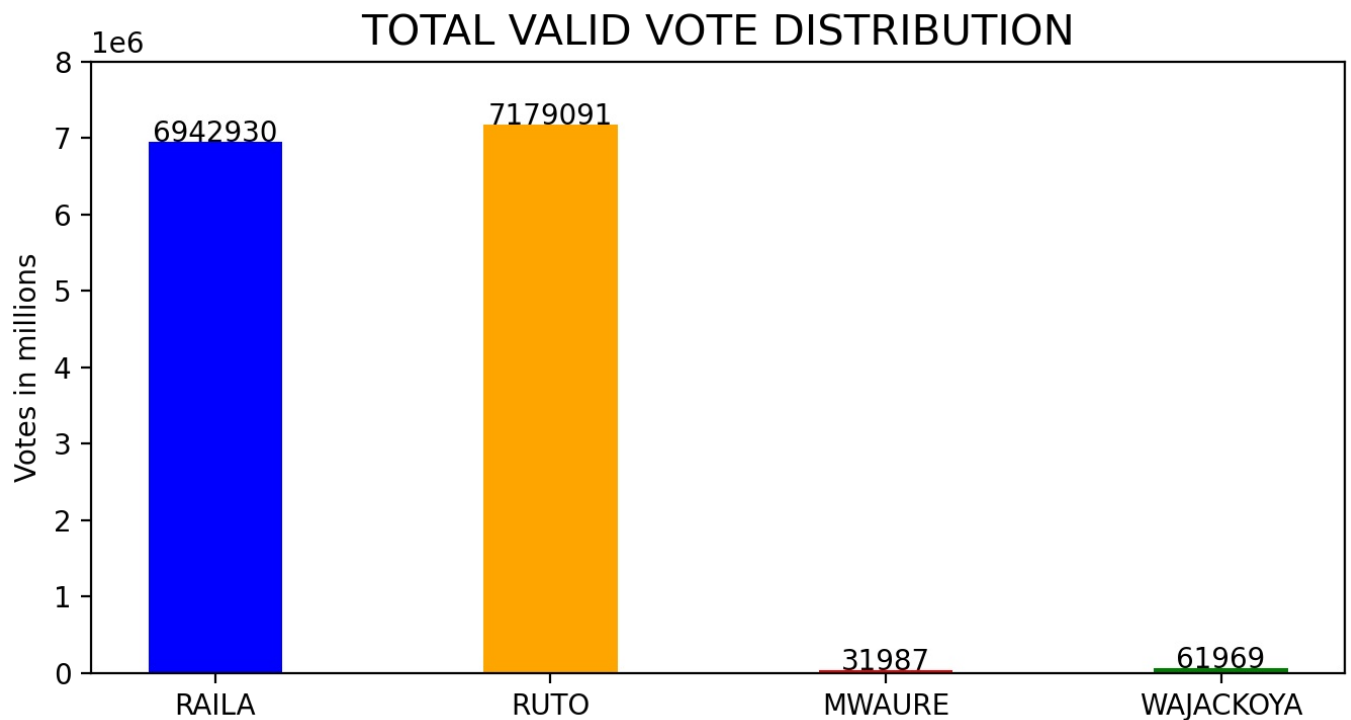
```
In [63]: wb = xw.Book()
sht = wb.sheets[0]
sht.name = "VOTE DISTRIBUTION"
def addlabels(xvalue,yvalue):
    for i in range(len(xvalue)):
        plt.text(i,yvalue[i], yvalue[i], ha = "center")

if __name__ == '__main__':
```

```

fig = plt.figure(figsize=(8,4), dpi = 200)
xvalue = ['RAILA', 'RUTO', 'MWAURE', 'WAJACKOYA']
yvalue = [6942930, 7179091, 31987, 61969]
c = ['blue', 'orange', 'red', 'green']
plt.bar(xvalue, yvalue, color = c , width = 0.4)
addlabels(xvalue,yvalue)
plt.ylim(0, 8000000)
plt.title("TOTAL VALID VOTE DISTRIBUTION", fontsize = 15)
plt.ylabel("Votes in millions", fontsize = 10)
plt.show()
sht.pictures.add(
fig,
name="VOTE DISTRIBUTION",
update=True,
left=sht.range("C4").left,
top=sht.range("C4").top,
height= 400,
width= 400,
)

```



```

In [64]: top_two_aspirants = candidate_percentage.dropna()
top_two_candidates = top_two_aspirants.drop(index = 50)
top_two_candidates[['COUNTY', 'RAILA_PERCENT', 'RUTO_PERCENT']]
top_two_candidates.head()

```

```

Out[64]:

```

	COUNTY	RAILA_PERCENT	RUTO_PERCENT	MWAURE_PERCENT	WAJACKOYA_PERCENT	SPOILT_PERCENT
0	Mombasa	58.065063	41.002376	0.173818	0.758742	1.374679
1	Kwale	70.131111	29.003011	0.230715	0.635164	0.759180
2	Kilifi	71.644844	27.087493	0.373749	0.893914	1.117743
3	Tana River	54.959628	44.388001	0.211753	0.440618	1.142185
4	Lamu	52.246854	45.688037	0.371480	1.693629	1.771520

```

In [65]: candidate_1 = np.array(top_two_candidates['RAILA_PERCENT'])
candidate_2 = np.array(top_two_candidates['RUTO_PERCENT'])
cand_1 = candidate_1.tolist()
cand_2 = candidate_2.tolist()
county_name = (top_two_candidates['COUNTY'])

```

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In [66]: index = top_two_candidates.index
index

```

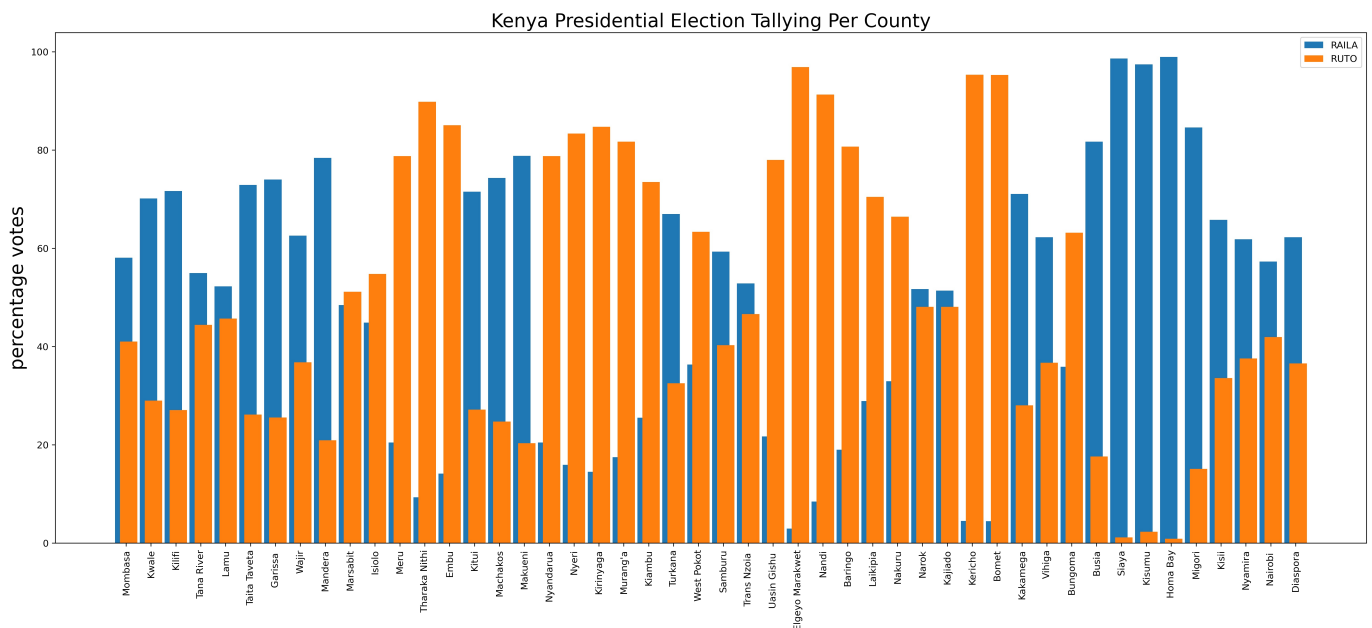
```

Out[66]: Int64Index([ 0,  1,  2,  3,  4,  5,  6,  7,  8,  9, 10, 11, 12, 13, 14, 15, 16,
                  17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33,
                  34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47],
                  dtype='int64')

```

In [67]:

```
wb = xw.Book()
sht = wb.sheets[0]
sht.name = "COUNTY TALLYING"
fig = plt.figure(figsize=(25,10), dpi = 300)
X_axis = np.arange(len(county_name))
plt.bar(X_axis - 0.1, cand_1, width = 0.7, label = "RAILA")
plt.bar(X_axis + 0.1, cand_2, width = 0.7, label = "RUTO")
plt.legend()
plt.ylabel('percentage votes', fontsize = 20)
plt.title("Kenya Presidential Election Tallying Per County", fontsize = 20)
plt.xticks(index, county_name, rotation = "vertical")
plt.show()
sht.pictures.add(
    fig,
    name="COUNTY TALLYING",
    update=True,
    left=sht.range("C4").left,
    top=sht.range("C4").top,
    height= 400,
    width= 400,
)
```



Out[67]: <Picture 'COUNTY TALLYING' in <Sheet [Book28]COUNTY TALLYING>>

In [68]:

```
def elecdata(list_arg_1):
    newlist = []
    for items in list_arg_1:
        if items > 25:
            newlist.append(items)

    return newlist

a = elecdata(cand_1)
b = elecdata(cand_2)
```

In [69]:

```
def elecdata(list_arg_2):
    newlist = []
    for items in list_arg_2:
        if items > 50:
            newlist.append(items)

    return newlist

c = elecdata(cand_1)
d = elecdata(cand_2)
```

In [70]:

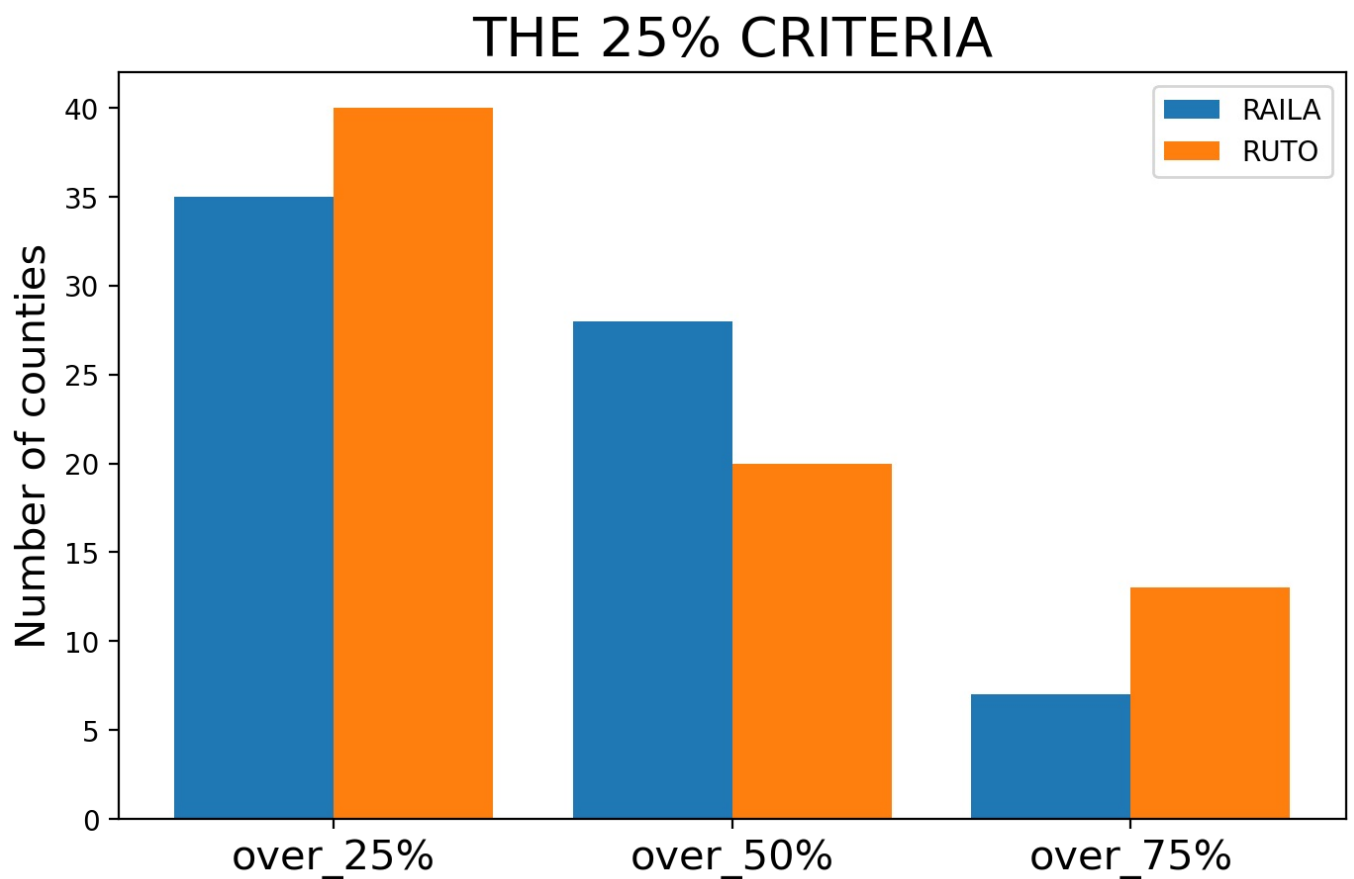
```
def elecdata(list_arg_3):
    newlist = []
    for items in list_arg_3:
        if items > 75:
            newlist.append(items)
```

```
return newlist
```

```
e = elecdata(cand_1)  
f = elecdata(cand_2)
```

```
In [71]: percentage = ['25%', '50%', '75%']  
cand_1_tally = [len(a), len(c), len(e)]  
cand_2_tally = [len(b), len(d), len(f)]  
labels_1 = ['over_25%', 'over_50%', 'over_75%']
```

```
In [72]: wb = xw.Book()  
sht = wb.sheets[0]  
sht.name = "% COUNTY COMPARISON"  
fig = plt.figure(figsize=(8,5) , dpi = 200)  
X_axis = np.arange(len(percentage))  
plt.bar(X_axis - 0.2, cand_1_tally , width = 0.4, label = "RAILA")  
plt.bar(X_axis + 0.2, cand_2_tally , width = 0.4, label = "RUTO")  
plt.legend()  
plt.ylabel('Number of counties', fontsize = 15)  
plt.title("THE 25% CRITERIA", fontsize = 20)  
plt.xticks([0,1,2], labels_1, fontsize = 15)  
plt.show()  
  
sht.pictures.add(  
    fig,  
    name="% COUNTY COMPARISON",  
    update=True,  
    left=sht.range("C4").left,  
    top=sht.range("C4").top,  
    height= 400,  
    width= 400,  
)
```



```
Out[72]: <Picture '% COUNTY COMPARISON' in <Sheet [Book29]% COUNTY COMPARISON>>
```

```
In [ ]:
```