```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import matplotlib.cm as cm

num_of_rows = 338
ridings = list(range(1, num_of_rows + 1))
parties = ['Conservative', 'Liberal', 'Bloc Quebecois', 'NDP', 'Green']
probabilities = [0.4, 0.35, 0.1, 0.1, 0.05]
np.random.seed(210)
party = np.random.choice(parties, size=num_of_rows, p=probabilities)
df = pd.DataFrame({
    'ridings': ridings,
    'party': party
})
print(df)
```

```
     ridings           party
0          1    Conservative
1          2    Conservative
2          3  Bloc Quebecois
3          4         Liberal
4          5    Conservative
..       ...             ...
333      334         Liberal
334      335             NDP
335      336             NDP
336      337    Conservative
337      338         Liberal

[338 rows x 2 columns]
```

```
df.to_csv('synthetic_data.csv', index=False)
```

```
df2 = pd.read_csv('table_tableau11.csv')
df2[['name','party']] = df2['Elected Candidate/Candidat élu'].str.split('/', expand=True)
df2=df2[['Electoral District Number/Numéro de circonscription','party']]
print(df2)
```

```
     Electoral District Number/Numéro de circonscription  \
0                                                10001
1                                                10002
2                                                10003
3                                                10004
4                                                10005
..                                                 ...
333                                              59041
334                                              59042
335                                              60001
336                                              61001
337                                              62001

                              party
0                           Libéral
1                           Libéral
2                       Conservateur
3                           Libéral
4                           Libéral
..                              ...
333  NPD-Nouveau Parti démocratique
334                         Libéral
335                         Libéral
336                         Libéral
337  NPD-Nouveau Parti démocratique

[338 rows x 2 columns]
```

```
df2.rename(columns={'Electoral District Number/Numéro de circonscription': 'ridings'}, inplace=True)
print(df2)
```

```
print(df2['party'].nunique())
```

```
5
```

```
#Creating the graph
party_counts = df2['party'].value_counts()
# Get a colormap
colors = cm.get_cmap('Set3', len(party_counts))
party_counts.plot(kind='bar', color=[colors(i) for i in range(len(party_counts))])

# Add labels and title
plt.xlabel('Parties')
plt.ylabel('Counts')
plt.title('MP Elected for Each Party')
plt.show()
```

```
<ipython-input-14-bf21c3e16d9c>:4: MatplotlibDeprecationWarning: The get_cmap function was deprecated in Matplotlib 3.7 and will b
  colors = cm.get_cmap('Set3', len(party_counts))
```