

In [1]:

```
import numpy as np
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
import warnings
warnings.filterwarnings('ignore')
```

In [2]:

```
condom_data = pd.read_csv("nyc_condom_availability.csv")
```

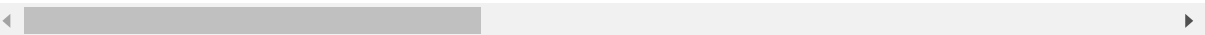
In [3]:

```
condom_data.head()
```

Out[3]:

	Facility PK	FacilityName	Service Category	Service Type	BuildingNumber	PartnerType	PartnerTypeDetail
0	53534559	Bushwick Communicare Center	Free Safer Sex Products	Condoms and Lubricant	NaN	Hospital	Clinical Facil
1	53534853	The Levee	Free Safer Sex Products	Condoms and Lubricant	NaN	Business	Bar/Lounge
2	53534781	NYCAP - Condom Distribution Program	Free Safer Sex Products	Condoms and Lubricant	NaN	Government	Government Agen
3	53534794	Parallax Center, Inc.	Free Safer Sex Products	Condoms and Lubricant	NaN	Hospital	Oth
4	53534796	Parsons Medical Center	Free Safer Sex Products	Condoms and Lubricant	NaN	Community Health Center	Clinical Facil

5 rows × 35 columns



In [4]:

```
condom_data.tail()
```

Out[4]:

	Facility PK	FacilityName	Service Category	Service Type	BuildingNumber	PartnerType	PartnerType
398	53534672	Headquarters Barbershop (Formerly Beato Barber...	Free Safer Sex Products	Condoms and Lubricant	NaN	Business	Ba
399	53534648	Gynecology & Women's Health Services	Free Safer Sex Products	Condoms and Lubricant	NaN	Private Practice	OB ,
400	53534859	Therapy	Free Safer Sex Products	Condoms and Lubricant	NaN	Business	Ba
401	53534603	Davidson Community Center	Free Safer Sex Products	Condoms and Lubricant	NaN	Community-Based Organization/Non-Profit	Commun
402	53534512	Audubon Barber shop	Free Safer Sex Products	Condoms and Lubricant	NaN	Business	Ba

5 rows × 35 columns

In [5]:

```
condom_data.shape
```

Out[5]:

(403, 35)

In [6]:



```
condom_data.columns
```

Out[6]:

```
Index(['Facility PK', 'FacilityName', 'Service Category', 'Service Type',  
      'BuildingNumber', 'PartnerType', 'PartnerTypeDetailed', 'Address',  
      'Address 2', 'Borough', 'Zipcode', 'Latitude', 'Longitude', 'Phone',  
      'AdditionalInfo', 'StartDate', 'EndDate', 'Monday', 'Tuesday',  
      'Wednesday', 'Thursday', 'Friday', 'Saturday', 'Sunday',  
      'Condoms (Male)', 'FC2 (Female/Insertive Condoms)', 'Lubricant',  
      'Facility Type', 'Website', 'Community Board', 'Council District',  
      'Census Tract', 'BIN', 'BBL', 'NTA'],  
      dtype='object')
```

In [7]:



```
condom_data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
```

```
RangeIndex: 403 entries, 0 to 402
```

```
Data columns (total 35 columns):
```

#	Column	Non-Null Count	Dtype
0	Facility PK	403 non-null	int64
1	FacilityName	403 non-null	object
2	Service Category	403 non-null	object
3	Service Type	403 non-null	object
4	BuildingNumber	0 non-null	float64
5	PartnerType	403 non-null	object
6	PartnerTypeDetailed	403 non-null	object
7	Address	403 non-null	object
8	Address 2	0 non-null	float64
9	Borough	403 non-null	object
10	Zipcode	403 non-null	int64
11	Latitude	403 non-null	float64
12	Longitude	403 non-null	float64
13	Phone	250 non-null	object
14	AdditionalInfo	403 non-null	object
15	StartDate	403 non-null	float64
16	EndDate	403 non-null	float64
17	Monday	260 non-null	object
18	Tuesday	269 non-null	object
19	Wednesday	269 non-null	object
20	Thursday	270 non-null	object
21	Friday	271 non-null	object
22	Saturday	185 non-null	object
23	Sunday	137 non-null	object
24	Condoms (Male)	403 non-null	bool
25	FC2 (Female/Insertive Condoms)	403 non-null	bool
26	Lubricant	403 non-null	bool
27	Facility Type	0 non-null	float64
28	Website	56 non-null	object
29	Community Board	399 non-null	float64
30	Council District	399 non-null	float64
31	Census Tract	399 non-null	float64
32	BIN	393 non-null	float64
33	BBL	403 non-null	int64
34	NTA	399 non-null	object

```
dtypes: bool(3), float64(11), int64(3), object(18)
```

```
memory usage: 102.1+ KB
```

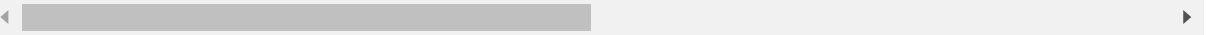
In [8]:



```
condom_data.describe()
```

Out[8]:

	Facility PK	BuildingNumber	Address 2	Zipcode	Latitude	Longitude	Star
count	4.030000e+02	0.0	0.0	403.000000	403.000000	403.000000	4.030000
mean	5.353469e+07	NaN	NaN	10421.975186	40.343959	-73.215964	1.900010
std	1.164803e+02	NaN	NaN	1188.611161	4.044885	7.340059	0.000000
min	5.353449e+07	NaN	NaN	0.000000	0.000000	-74.134166	1.900010
25%	5.353459e+07	NaN	NaN	10014.000000	40.711374	-73.990481	1.900010
50%	5.353469e+07	NaN	NaN	10302.000000	40.742820	-73.956304	1.900010
75%	5.353479e+07	NaN	NaN	11212.000000	40.794668	-73.912943	1.900010
max	5.353489e+07	NaN	NaN	11435.000000	40.896565	0.000000	1.900010



In [10]:



```
condom_data.isnull().sum()
```

Out[10]:

Facility PK	0
FacilityName	0
Service Category	0
Service Type	0
BuildingNumber	403
PartnerType	0
PartnerTypeDetailed	0
Address	0
Address 2	403
Borough	0
Zipcode	0
Latitude	0
Longitude	0
Phone	153
AdditionalInfo	0
StartDate	0
EndDate	0
Monday	143
Tuesday	134
Wednesday	134
Thursday	133
Friday	132
Saturday	218
Sunday	266
Condoms (Male)	0
FC2 (Female/Insertive Condoms)	0
Lubricant	0
Facility Type	403
Website	347
Community Board	4
Council District	4
Census Tract	4
BIN	10
BBL	0
NTA	4

dtype: int64

In [12]:



```
condom_data = condom_data.drop(['BuildingNumber', 'Address 2', 'Phone',  
                                'Monday', 'Tuesday', 'Wednesday', 'Thursday',  
                                'Friday', 'Saturday', 'Sunday', 'Facility Type',  
                                'Website'], axis = 1)
```

In [13]:

```
condom_data.head()
```

Out[13]:

	Facility PK	FacilityName	Service Category	Service Type	PartnerType	PartnerTypeDetailed	Address
0	53534559	Bushwick Communicare Center	Free Safer Sex Products	Condoms and Lubricant	Hospital	Clinical Facility	335 Central Avenue
1	53534853	The Levee	Free Safer Sex Products	Condoms and Lubricant	Business	Bar/Lounge	212 Berry Street
2	53534781	NYCAP - Condom Distribution Program	Free Safer Sex Products	Condoms and Lubricant	Government	Government Agency	1932 Arthur Avenue,"2nd Floor, Room 203B"
3	53534794	Parallax Center, Inc.	Free Safer Sex Products	Condoms and Lubricant	Hospital	Other	145 East 32 Street,Floor 6
4	53534796	Parsons Medical Center	Free Safer Sex Products	Condoms and Lubricant	Community Health Center	Clinical Facility	88-01 Parsons Boulevard

5 rows × 23 columns



In [14]:



```
condom_data.isnull().sum()
```

Out[14]:

Facility PK	0
FacilityName	0
Service Category	0
Service Type	0
PartnerType	0
PartnerTypeDetailed	0
Address	0
Borough	0
Zipcode	0
Latitude	0
Longitude	0
AdditionalInfo	0
StartDate	0
EndDate	0
Condoms (Male)	0
FC2 (Female/Insertive Condoms)	0
Lubricant	0
Community Board	4
Council District	4
Census Tract	4
BIN	10
BBL	0
NTA	4
dtype:	int64

In [15]:



```
condom_data.dropna(inplace = True)
```

In [16]:



```
condom_data.shape
```

Out[16]:

```
(393, 23)
```

In [17]:



```
condom_data['PartnerType'].unique()
```

Out[17]:

```
array(['Hospital', 'Business', 'Government', 'Community Health Center',  
      'Private Practice', 'Community-Based Organization/Non-Profit',  
      'Sexual Health Clinics (NYC DOHMH)', 'Pharmacy', 'Education',  
      'Faith-Based Organization'], dtype=object)
```



In [18]:

```
condom_data['PartnerType'].value_counts()
```

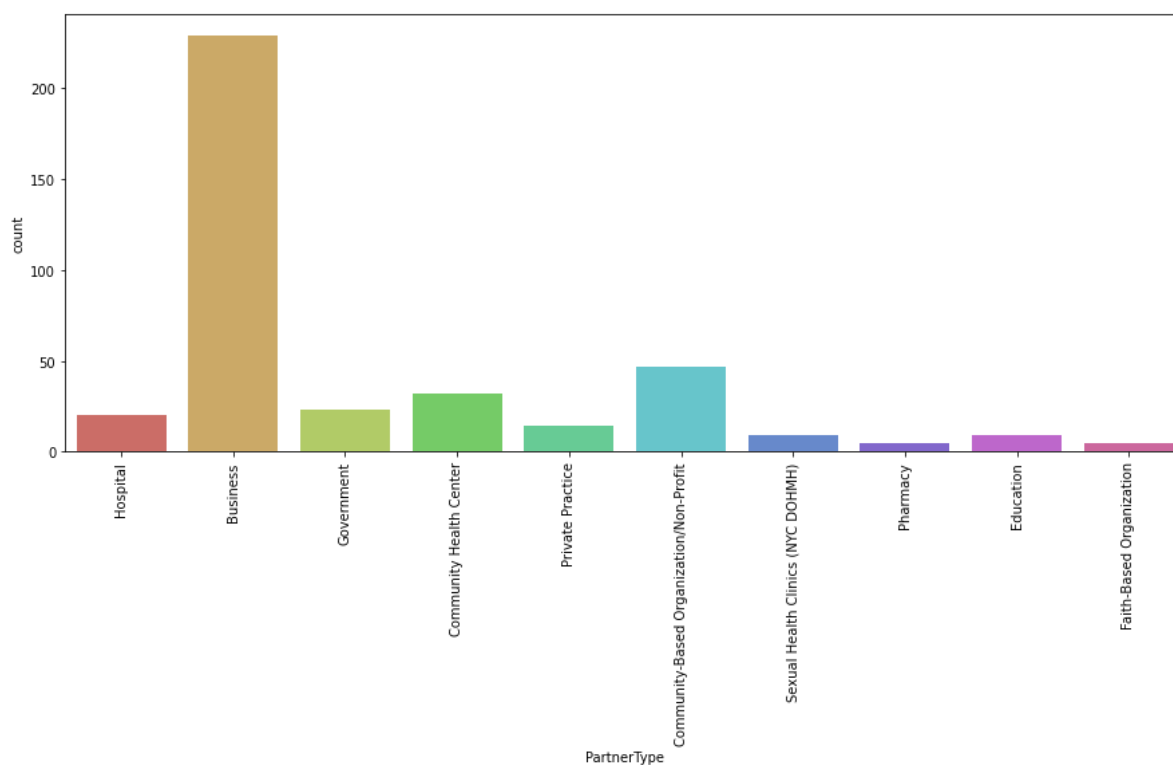
Out[18]:

Business	229
Community-Based Organization/Non-Profit	47
Community Health Center	32
Government	23
Hospital	20
Private Practice	14
Sexual Health Clinics (NYC DOHMH)	9
Education	9
Pharmacy	5
Faith-Based Organization	5

Name: PartnerType, dtype: int64

In [19]:

```
plt.figure(figsize=(15,6))  
sns.countplot('PartnerType', data = condom_data, palette='hls')  
plt.xticks(rotation = 90)  
plt.show()
```



In [20]:



```
condom_data['PartnerTypeDetailed'].unique()
```

Out[20]:

```
array(['Clinical Facility', 'Bar/Lounge', 'Government Agency', 'Other',  
      'Physician', 'Community Center', 'Sauna/Spa', 'Social Service',  
      'Youth Center', 'Barbershop', 'Night Club', 'Tattoo Parlor',  
      'Beauty Salon', 'Theater', 'Office', 'Restaurant', 'Retail Store',  
      'Café', 'Education', "Women's Center", 'Gay Bar', 'None',  
      'Sex Store', 'Book Store', 'Gym/Health Club', 'Taxi/Car Service',  
      'NYC Council Member Office', 'YMCA/JCC', 'Pharmacy',  
      'Elected Official', 'Bodega/Deli/Mini Market',  
      'College/University', 'Art Center', 'Liquor Store',  
      'Legal Service', 'Housing', 'Student Housing', "Men's Spa",  
      'Museum', 'Christian Organization', 'Laundromat',  
      'Jewish Organization', 'OB / OB-GYN'], dtype=object)
```

In [21]:



```
condom_data['PartnerTypeDetailed'].value_counts()
```

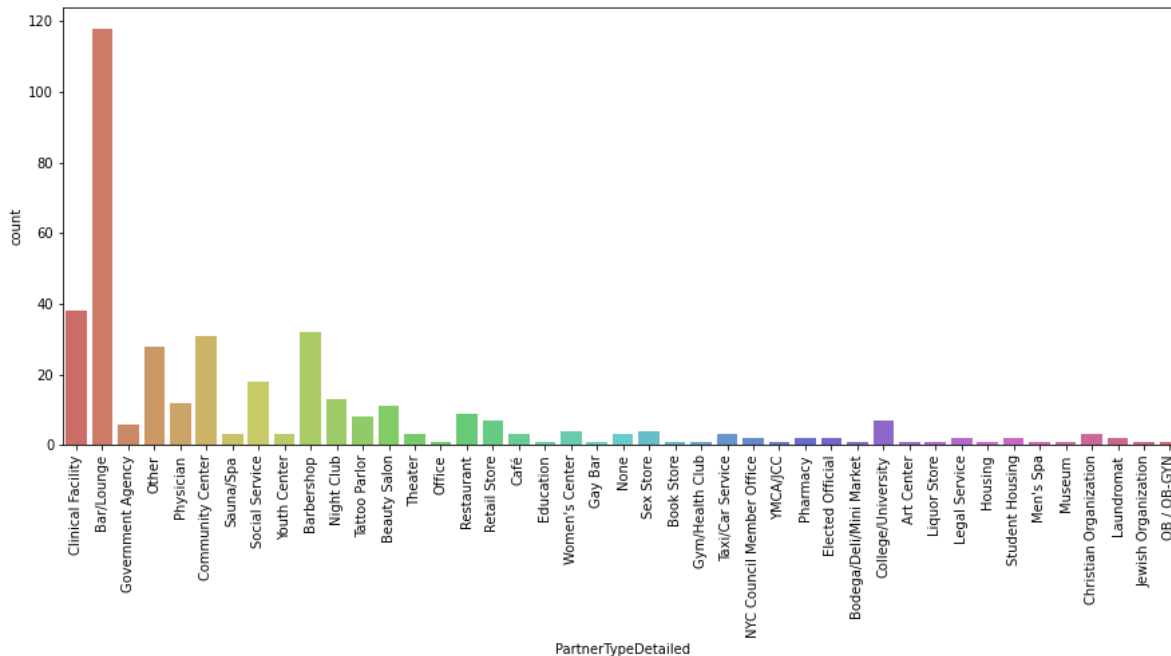
Out[21]:

Bar/Lounge	118
Clinical Facility	38
Barbershop	32
Community Center	31
Other	28
Social Service	18
Night Club	13
Physician	12
Beauty Salon	11
Restaurant	9
Tattoo Parlor	8
College/University	7
Retail Store	7
Government Agency	6
Women's Center	4
Sex Store	4
Christian Organization	3
Taxi/Car Service	3
None	3
Youth Center	3
Café	3
Sauna/Spa	3
Theater	3
Legal Service	2
Laundromat	2
NYC Council Member Office	2
Pharmacy	2
Elected Official	2
Student Housing	2
Jewish Organization	1
Museum	1
Men's Spa	1
Housing	1
Education	1
Liquor Store	1
Art Center	1
Gay Bar	1
Bodega/Deli/Mini Market	1
YMCA/JCC	1
Gym/Health Club	1
Book Store	1
Office	1
OB / OB-GYN	1

Name: PartnerTypeDetailed, dtype: int64

In [23]:

```
plt.figure(figsize=(15,6))
sns.countplot(condom_data['PartnerTypeDetailed'],
              data = condom_data, palette='hls')
plt.xticks(rotation = 90)
plt.show()
```



In [24]:

```
condom_data['Condoms (Male)'].unique()
```

Out[24]:

```
array([ True, False])
```

In [25]:

```
condom_data['Condoms (Male)'].value_counts()
```

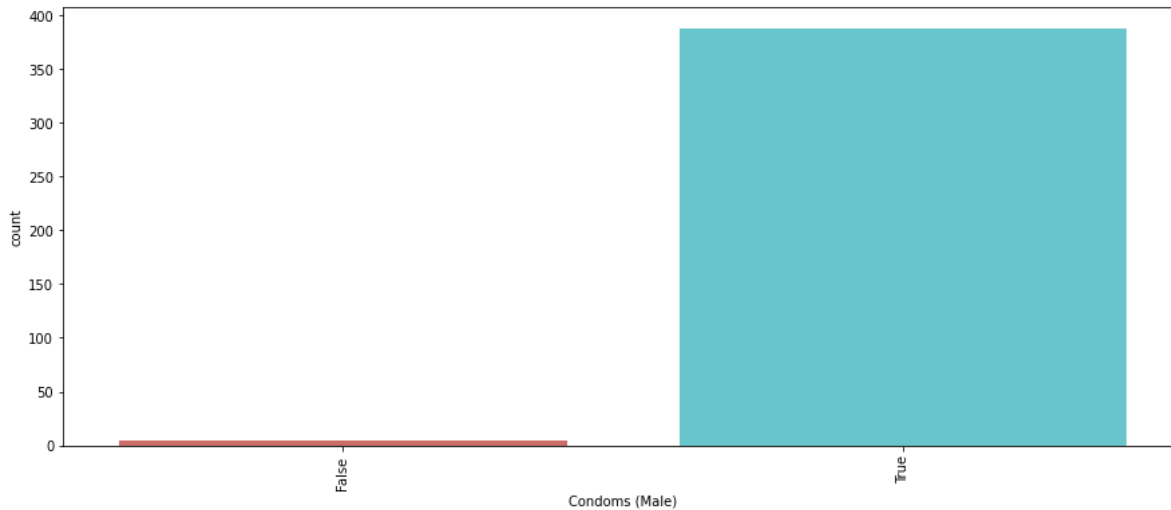
Out[25]:

```
True      388
False       5
Name: Condoms (Male), dtype: int64
```

In [26]:



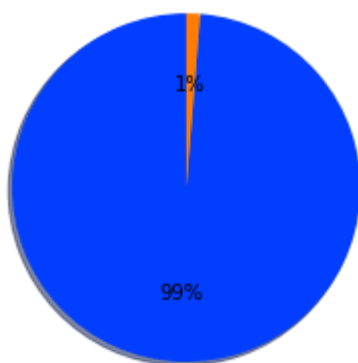
```
plt.figure(figsize=(15,6))
sns.countplot('Condoms (Male)', data = condom_data, palette='hls')
plt.xticks(rotation = 90)
plt.show()
```



In [36]:



```
colors = sns.color_palette('bright')
plt.pie(condom_data['Condoms (Male)'].value_counts(), colors = colors,
        autopct = '%0.0f%%', shadow = 'True', startangle = 90)
plt.show()
```



In [27]:



```
condom_data['FC2 (Female/Insertive Condoms)'].unique()
```

Out[27]:

```
array([False,  True])
```

In [28]:

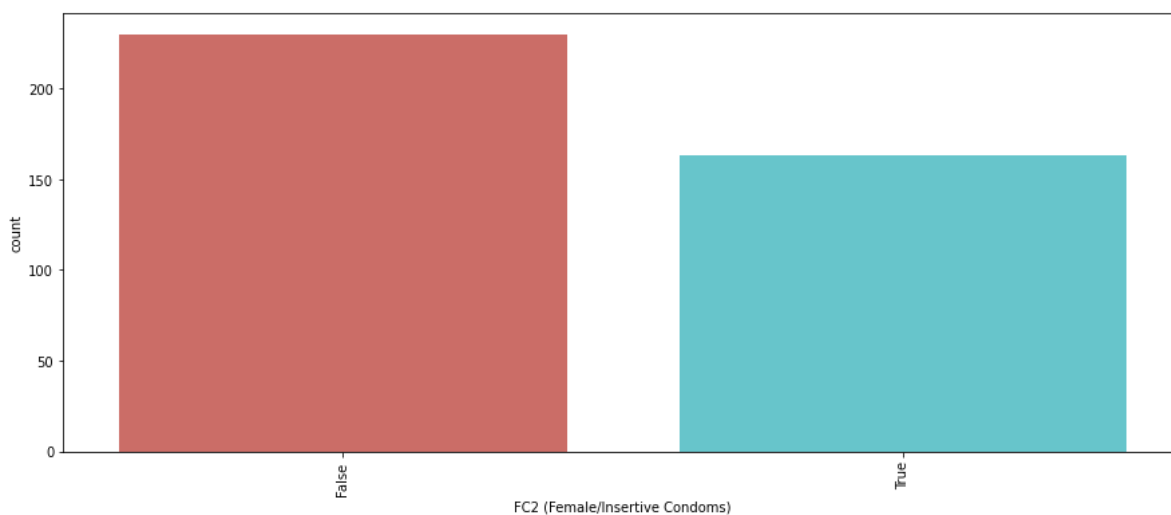
```
condom_data['FC2 (Female/Insertive Condoms)'].value_counts()
```

Out[28]:

```
False    230
True     163
Name: FC2 (Female/Insertive Condoms), dtype: int64
```

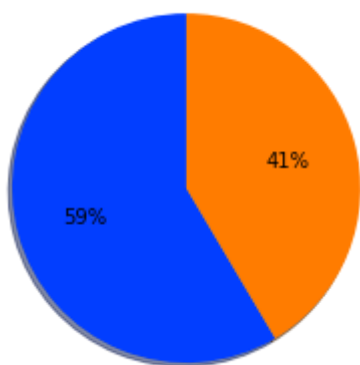
In [29]:

```
plt.figure(figsize=(15,6))
sns.countplot('FC2 (Female/Insertive Condoms)', data = condom_data, palette='hls')
plt.xticks(rotation = 90)
plt.show()
```



In [37]:

```
colors = sns.color_palette('bright')
plt.pie(condom_data['FC2 (Female/Insertive Condoms)'].value_counts(), colors = colors,
        autopct = '%0.0f%', shadow = 'True', startangle = 90)
plt.show()
```



In [30]:



```
condom_data['Community Board'].unique()
```

Out[30]:

```
array([304., 301., 206., 106., 412., 112., 401., 407., 307., 104., 302.,  
       209., 404., 202., 204., 403., 103., 110., 102., 205., 109., 203.,  
       105., 501., 201., 306., 107., 101., 207., 305., 313., 111., 303.,  
       108., 308., 317., 406., 318., 309., 212., 208., 311., 402., 316.,  
       314., 409.])
```

In [31]:



```
condom_data['Community Board'].value_counts()
```

Out[31]:

104.0	46
102.0	38
103.0	36
403.0	23
204.0	16
302.0	15
112.0	13
304.0	12
109.0	11
301.0	11
105.0	11
205.0	10
201.0	10
111.0	9
306.0	8
110.0	8
106.0	8
305.0	7
202.0	7
303.0	7
412.0	7
101.0	7
308.0	6
501.0	6
404.0	6
307.0	5
401.0	5
203.0	4
207.0	4
407.0	4
206.0	3
316.0	3
402.0	3
317.0	3
108.0	3
107.0	3
313.0	2
406.0	2
212.0	2
209.0	2
314.0	2
318.0	1
309.0	1
208.0	1
311.0	1
409.0	1

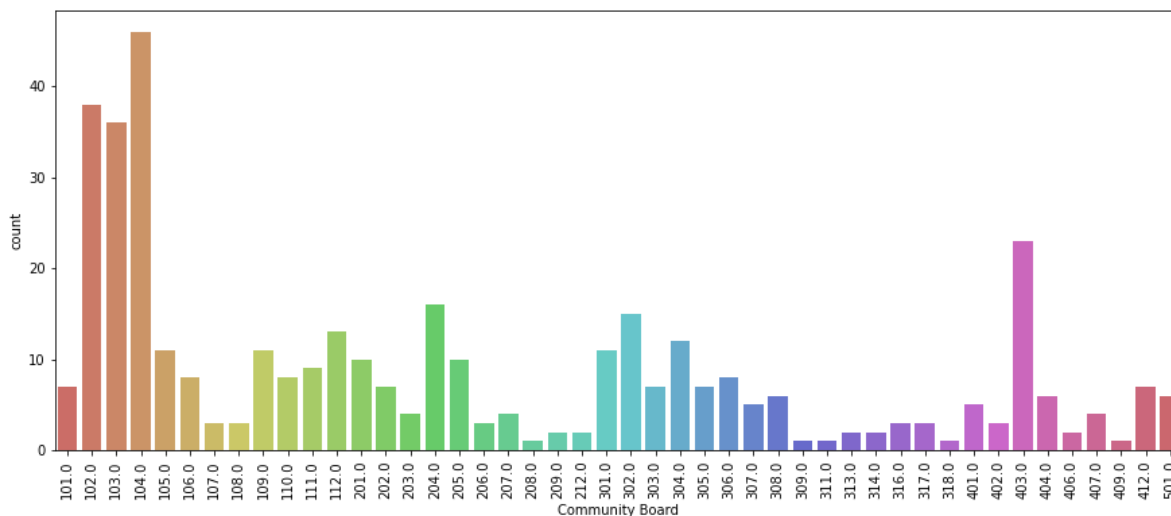
Name: Community Board, dtype: int64



In [32]:



```
plt.figure(figsize=(15,6))
sns.countplot('Community Board', data = condom_data, palette='hls')
plt.xticks(rotation = 90)
plt.show()
```



In [33]:



```
condom_data['Council District'].unique()
```

Out[33]:

```
array([37., 34., 17.,  2., 24., 10., 26., 20.,  4., 38.,  3., 33., 18.,
       21., 35., 27., 16., 25., 22.,  9., 15.,  7., 49.,  8., 39.,  1.,
       11., 42., 47., 36.,  5., 41., 14., 28., 29., 46., 45., 12., 44.,
       23., 40., 32.])
```

In [34]:



```
condom_data['Council District'].value_counts()
```

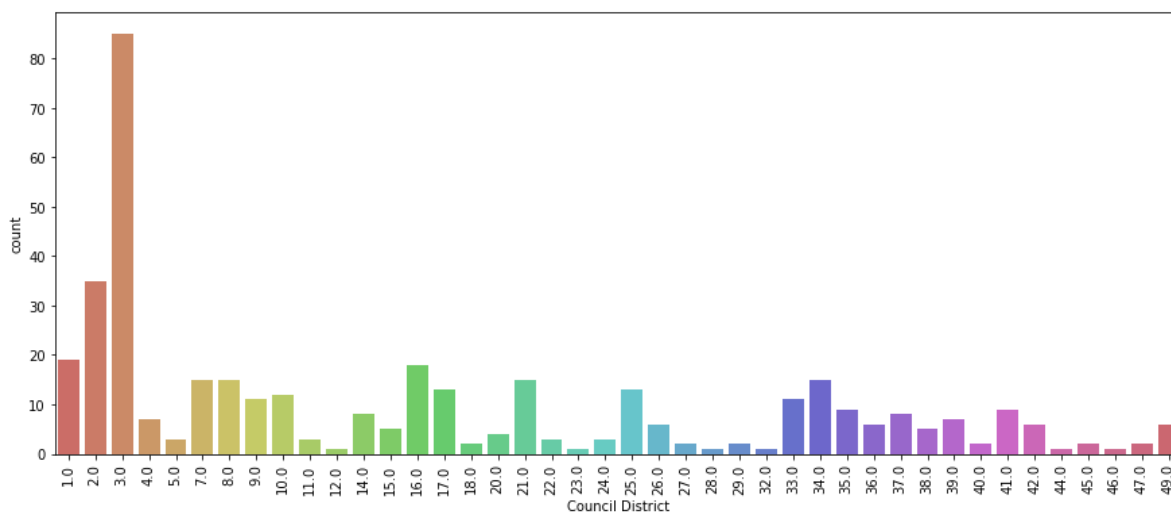
Out[34]:

3.0	85
2.0	35
1.0	19
16.0	18
7.0	15
8.0	15
34.0	15
21.0	15
17.0	13
25.0	13
10.0	12
33.0	11
9.0	11
41.0	9
35.0	9
14.0	8
37.0	8
4.0	7
39.0	7
36.0	6
49.0	6
42.0	6
26.0	6
15.0	5
38.0	5
20.0	4
11.0	3
22.0	3
5.0	3
24.0	3
29.0	2
40.0	2
45.0	2
27.0	2
47.0	2
18.0	2
28.0	1
46.0	1
12.0	1
44.0	1
23.0	1
32.0	1

Name: Council District, dtype: int64

In [35]:

```
plt.figure(figsize=(15,6))
sns.countplot('Council District', data = condom_data, palette='hls')
plt.xticks(rotation = 90)
plt.show()
```



In [38]:

```
from sklearn import preprocessing
label_encoder = preprocessing.LabelEncoder()
```

In [39]:

```
condom_data['PartnerType'] = label_encoder.fit_transform(condom_data['PartnerType'])
condom_data['PartnerTypeDetailed'] = label_encoder.fit_transform(condom_data['PartnerTypeDetailed'])
condom_data['Condoms (Male)'] = label_encoder.fit_transform(condom_data['Condoms (Male)'])
condom_data['FC2 (Female/Insertive Condoms)'] = label_encoder.fit_transform(condom_data['FC2 (Female/Insertive Condoms)'])
```

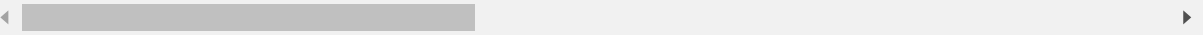
In [40]:

```
condom_data.head()
```

Out[40]:

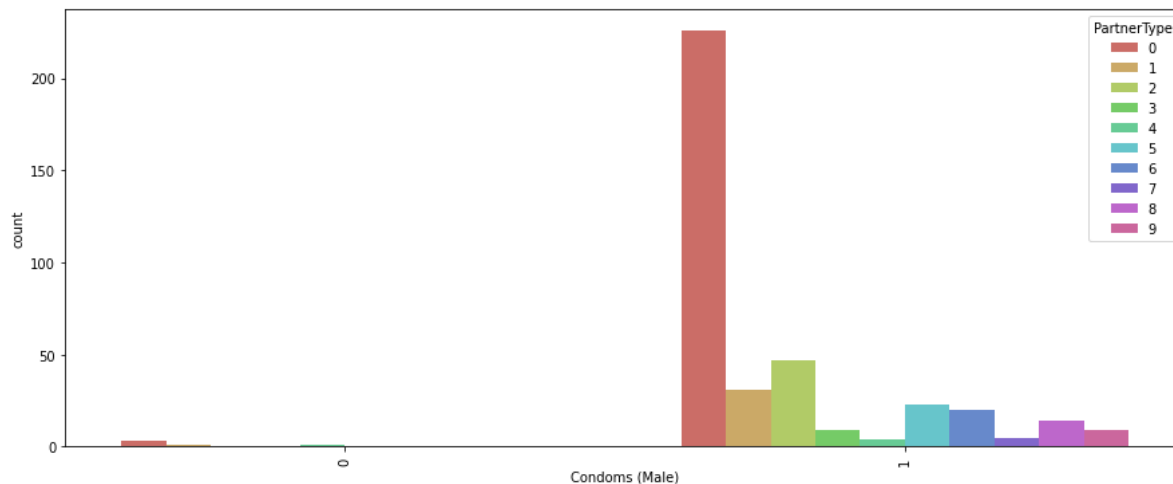
	Facility PK	FacilityName	Service Category	Service Type	PartnerType	PartnerTypeDetailed	Address
0	53534559	Bushwick Communicare Center	Free Safer Sex Products	Condoms and Lubricant	6	8	335 Central Avenue
1	53534853	The Levee	Free Safer Sex Products	Condoms and Lubricant	0	1	212 Berry Street
2	53534781	NYCAP - Condom Distribution Program	Free Safer Sex Products	Condoms and Lubricant	5	14	1932 Arthur Avenue,"2nd Floor, Room 203B"
3	53534794	Parallax Center, Inc.	Free Safer Sex Products	Condoms and Lubricant	6	28	145 East 32 Street,Floor 6
4	53534796	Parsons Medical Center	Free Safer Sex Products	Condoms and Lubricant	1	8	88-01 Parsons Boulevard

5 rows × 23 columns



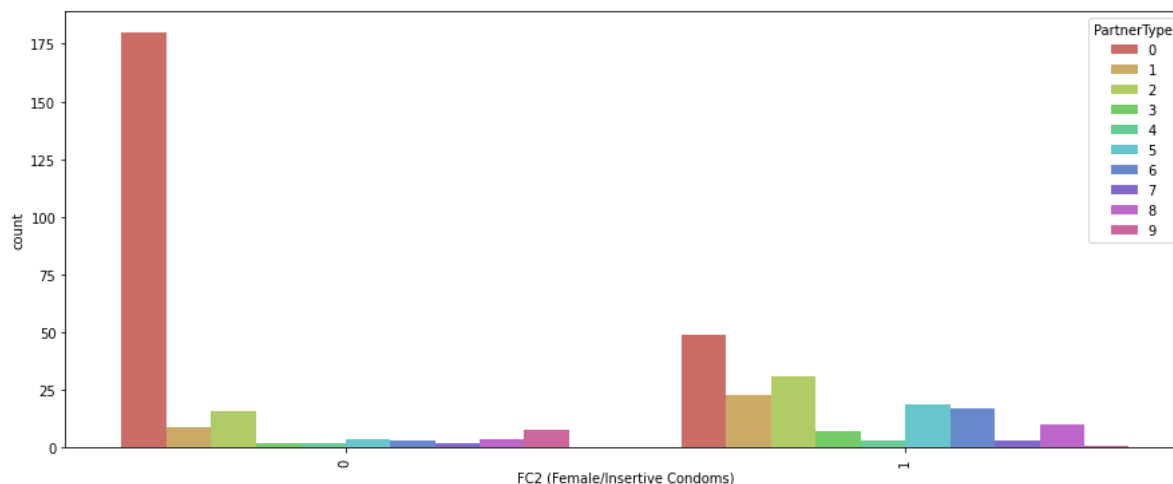
In [43]:

```
plt.figure(figsize=(15,6))
sns.countplot(x = 'Condoms (Male)', hue = 'PartnerType', data = condom_data,
              palette='hls')
plt.xticks(rotation = 90)
plt.show()
```



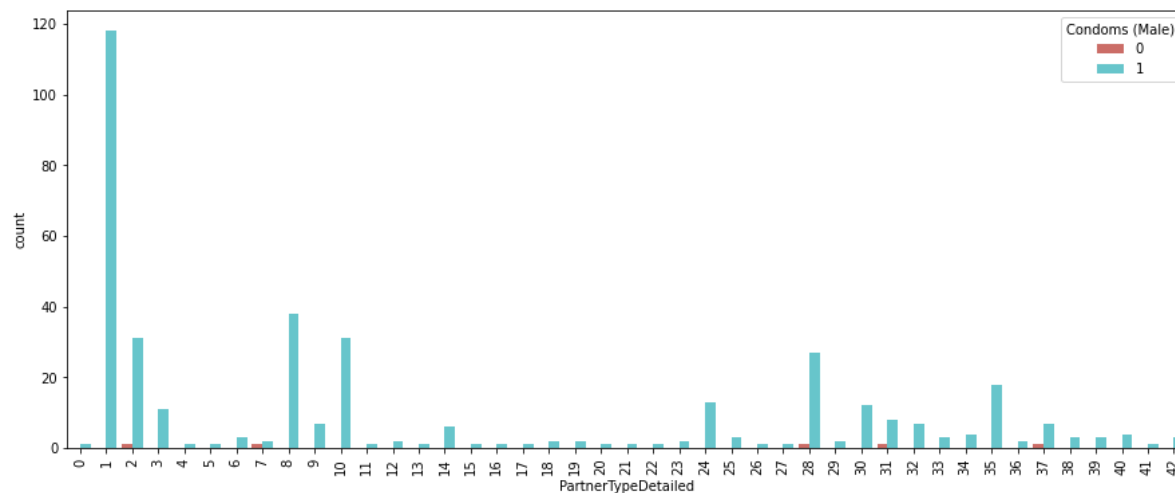
In [45]:

```
plt.figure(figsize=(15,6))
sns.countplot(x = 'FC2 (Female/Insertive Condoms)', hue = 'PartnerType', data = condom_data,
              palette='hls')
plt.xticks(rotation = 90)
plt.show()
```



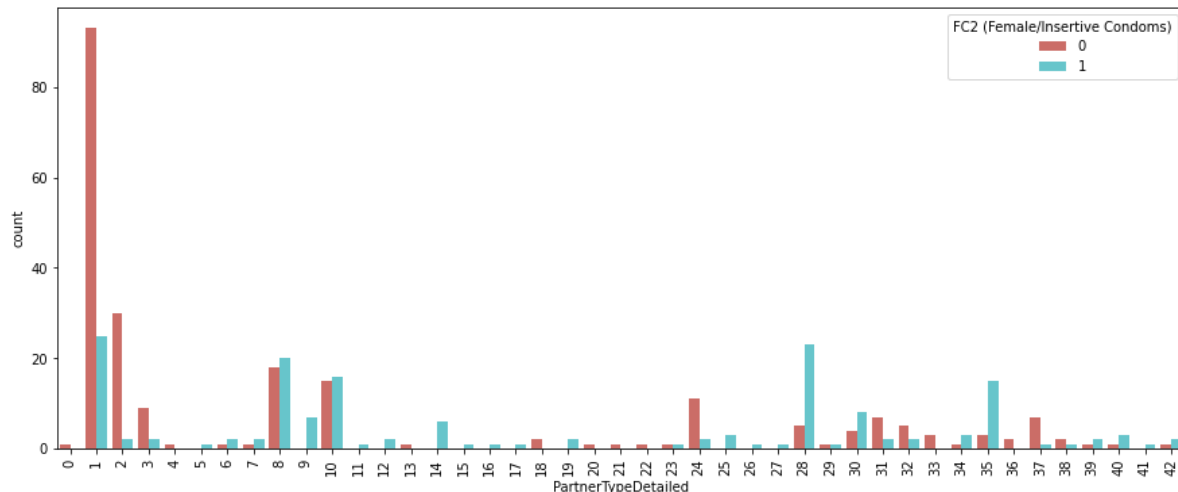
In [46]:

```
plt.figure(figsize=(15,6))
sns.countplot(hue = 'Condoms (Male)', x = 'PartnerTypeDetailed', data = condom_data,
              palette='hls')
plt.xticks(rotation = 90)
plt.show()
```



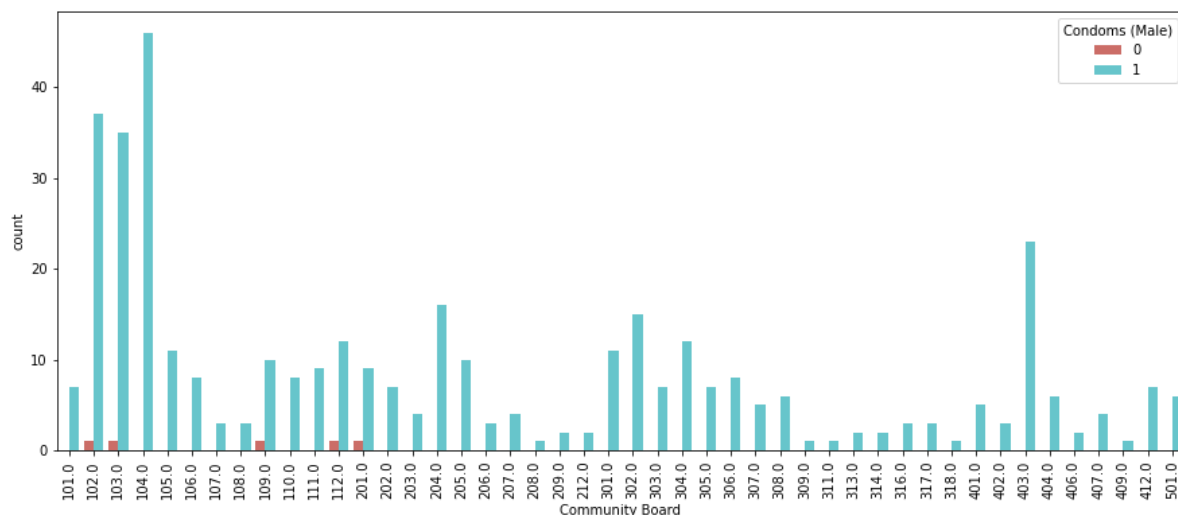
In [47]:

```
plt.figure(figsize=(15,6))
sns.countplot(hue = 'FC2 (Female/Insertive Condoms)', x = 'PartnerTypeDetailed', data =
              palette='hls')
plt.xticks(rotation = 90)
plt.show()
```



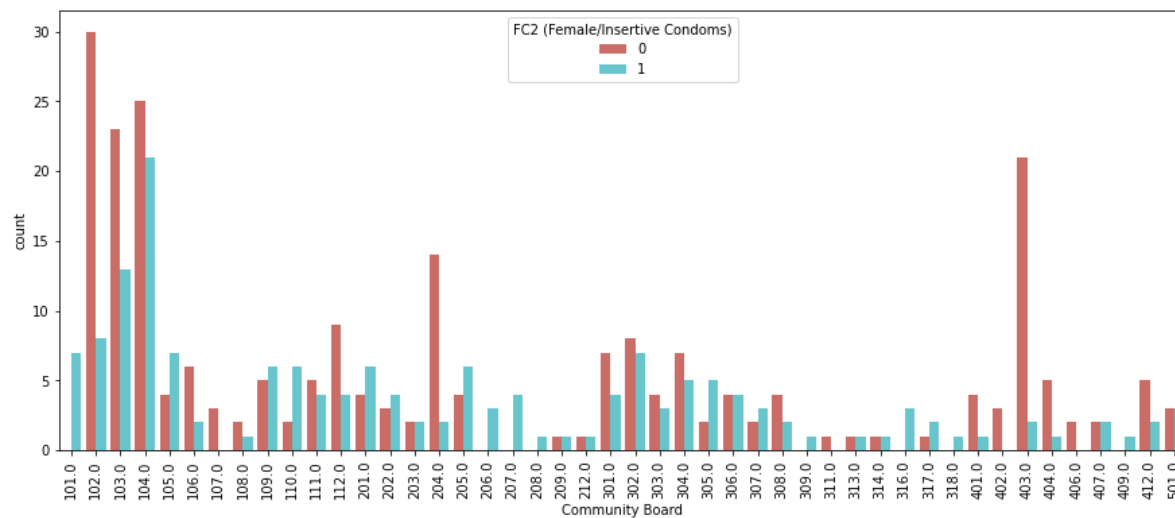
In [48]:

```
plt.figure(figsize=(15,6))
sns.countplot(hue = 'Condoms (Male)', x = 'Community Board', data = condom_data,
              palette='hls')
plt.xticks(rotation = 90)
plt.show()
```



In [49]:

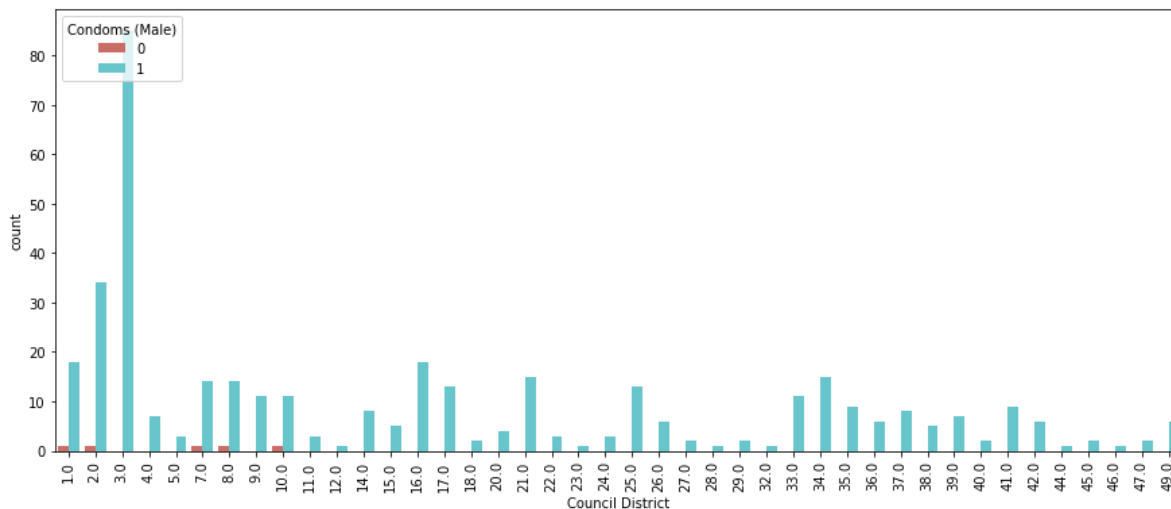
```
plt.figure(figsize=(15,6))
sns.countplot(hue = 'FC2 (Female/Insertive Condoms)', x = 'Community Board', data = conc
              palette='hls')
plt.xticks(rotation = 90)
plt.show()
```





In [50]:

```
plt.figure(figsize=(15,6))
sns.countplot(hue = 'Condoms (Male)', x = 'Council District', data = condom_data,
              palette='hls')
plt.xticks(rotation = 90)
plt.show()
```



In [51]:

```
plt.figure(figsize=(15,6))
sns.countplot(hue = 'FC2 (Female/Insertive Condoms)', x = 'Council District', data = condom_data,
              palette='hls')
plt.xticks(rotation = 90)
plt.show()
```

