IPL Sold Players Analysis

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Project 3

Kindly let me know your feedback & feel free to connect

In [1]:
```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

In [2]:
```
data = pd.read_csv('IPL_2023-22_Sold_Players.csv')
data.head()
```

Out[2]:

	Season	Name	Nationality	Type	Team	Price
0	2023	Ajinkya Rahane	Indian	Batter	Chennai Super Kings	50,00,000
1	2023	Bhagath Varma	Indian	All-Rounder	Chennai Super Kings	20,00,000
2	2023	Kyle Jamieson	Overseas	Bowler	Chennai Super Kings	1,00,00,000
3	2023	Ajay Mandal	Indian	All-Rounder	Chennai Super Kings	20,00,000
4	2023	Nishant Sindhu	Indian	All-Rounder	Chennai Super Kings	60,00,000

In [3]:
```
data.columns
```

Out[3]:
```
Index(['Season', 'Name', 'Nationality', 'Type', 'Team', 'Price'], dtype='obje
ct')
```

Show Unique values in individual columns

In [4]:
```
data.Nationality.unique()
```

Out[4]:
```
array(['Indian ', 'Overseas '], dtype=object)
```

In [5]:
```
data.Season.unique()
```

Out[5]:
```
array([2023, 2022], dtype=int64)
```

In [6]:
```
data.Team.unique()
```

Out[6]:
```
array([' Chennai Super Kings', ' Delhi Capitals', ' Gujarat Titans',
       ' Kolkata Knight Riders', ' Lucknow Super Giants',
       ' Mumbai Indians', ' Punjab Kings', ' Rajasthan Royals',
       ' Royal Challengers Bangalore', ' Sunrisers Hyderabad'],
      dtype=object)
```

In [7]:
```
data.Type.unique()
```

Out[7]:
```
array(['Batter ', 'All-Rounder ', 'Bowler ', 'Wicket-Keeper ', 'Batsman ',
       'Wicket Keeper '], dtype=object)
```

Replace name to some unique ones for better understanding

In [8]:
```
data['Team'] = data['Team'].str.strip()
```

In [9]:
```
data['Team'].unique()
```

Out[9]:
```
array(['Chennai Super Kings', 'Delhi Capitals', 'Gujarat Titans',
       'Kolkata Knight Riders', 'Lucknow Super Giants', 'Mumbai Indians',
       'Punjab Kings', 'Rajasthan Royals', 'Royal Challengers Bangalore',
       'Sunrisers Hyderabad'], dtype=object)
```

In [10]:
```
data['Type'] = data['Type'].str.strip()
```

In [11]:
```
data['Type'].unique()
```

Out[11]:
```
array(['Batter', 'All-Rounder', 'Bowler', 'Wicket-Keeper', 'Batsman',
       'Wicket Keeper'], dtype=object)
```

In [12]:
```
data['Type'] = data['Type'].replace('Batter', 'Batsman')
data['Type'] = data['Type'].replace('Wicket Keeper', 'Wicket-Keeper')
```

In [13]:
```
data['Type'].unique()
```

Out[13]:
```
array(['Batsman', 'All-Rounder', 'Bowler', 'Wicket-Keeper'], dtype=object)
```

Checking of Duplicate Values

In [14]:
```
data.duplicated().sum()
```

Out[14]:
```
0
```

In [15]:
```
data['Team'].isna().sum()
```

Out[15]:
```
0
```

In [16]:
```
data['Nationality'].isna().sum()
```

Out[16]:
```
0
```

In [17]:
```
data['Type'].value_counts()
```

Out[17]:
```
All-Rounder      106
Bowler            96
Batsman           48
Wicket-Keeper     34
Name: Type, dtype: int64
```

In [18]:
```
data['Nationality'].value_counts()
```

Out[18]:
```
Indian       188
Overseas      96
Name: Nationality, dtype: int64
```

In [19]:
```
data['Season'].value_counts()
```

Out[19]:
```
2022    204
2023     80
Name: Season, dtype: int64
```

In [20]:
```
data.head()
```

Out[20]:

	Season	Name	Nationality	Type	Team	Price
0	2023	Ajinkya Rahane	Indian	Batsman	Chennai Super Kings	50,00,000
1	2023	Bhagath Varma	Indian	All-Rounder	Chennai Super Kings	20,00,000
2	2023	Kyle Jamieson	Overseas	Bowler	Chennai Super Kings	1,00,00,000
3	2023	Ajay Mandal	Indian	All-Rounder	Chennai Super Kings	20,00,000
4	2023	Nishant Sindhu	Indian	All-Rounder	Chennai Super Kings	60,00,000

Total number of null values in each column

In [21]:
```
null_counts = data.isnull().sum()
for column in data.columns:
    count = null_counts[column]
    print(f'Total number of null values in {column} column: {count}')
```

```
Total number of null values in Season column: 0
Total number of null values in Name column: 0
Total number of null values in Nationality column: 0
Total number of null values in Type column: 0
Total number of null values in Team column: 0
Total number of null values in Price column: 0
```

In [22]:
```
data.dtypes
```

Out[22]:
```
Season          int64
Name           object
Nationality    object
Type           object
Team           object
Price          object
dtype: object
```

Before replacing

In [23]:
```
data['Price'].head()
```

Out[23]:
```
0      50,00,000
1      20,00,000
2    1,00,00,000
3      20,00,000
4      60,00,000
Name: Price, dtype: object
```

In [24]:
```
data['Price'] = data['Price'].str.replace(',','').astype('int')
```

After replacing

In [25]:
```
data['Price'].head()
```

Out[25]:
```
0     5000000
1     2000000
2    10000000
3     2000000
4     6000000
Name: Price, dtype: int32
```

Create a function to shorten team names so that we can use them with ease.

In [26]:
```
def short_name(name):
    list_name = []
    for n in name:
        shortname = ""
        l = n.split(" ")
        for i in range(len(l)):
            shortname = shortname+l[i][0]
        list_name.append(shortname)
    return list_name
```

In [27]:
```
data['Team name'] = short_name(data['Team']);
```

In [28]:
```
data['Team name'].unique()
```

Out[28]:
```
array(['CSK', 'DC', 'GT', 'KKR', 'LSG', 'MI', 'PK', 'RR', 'RCB', 'SH'],
      dtype=object)
```

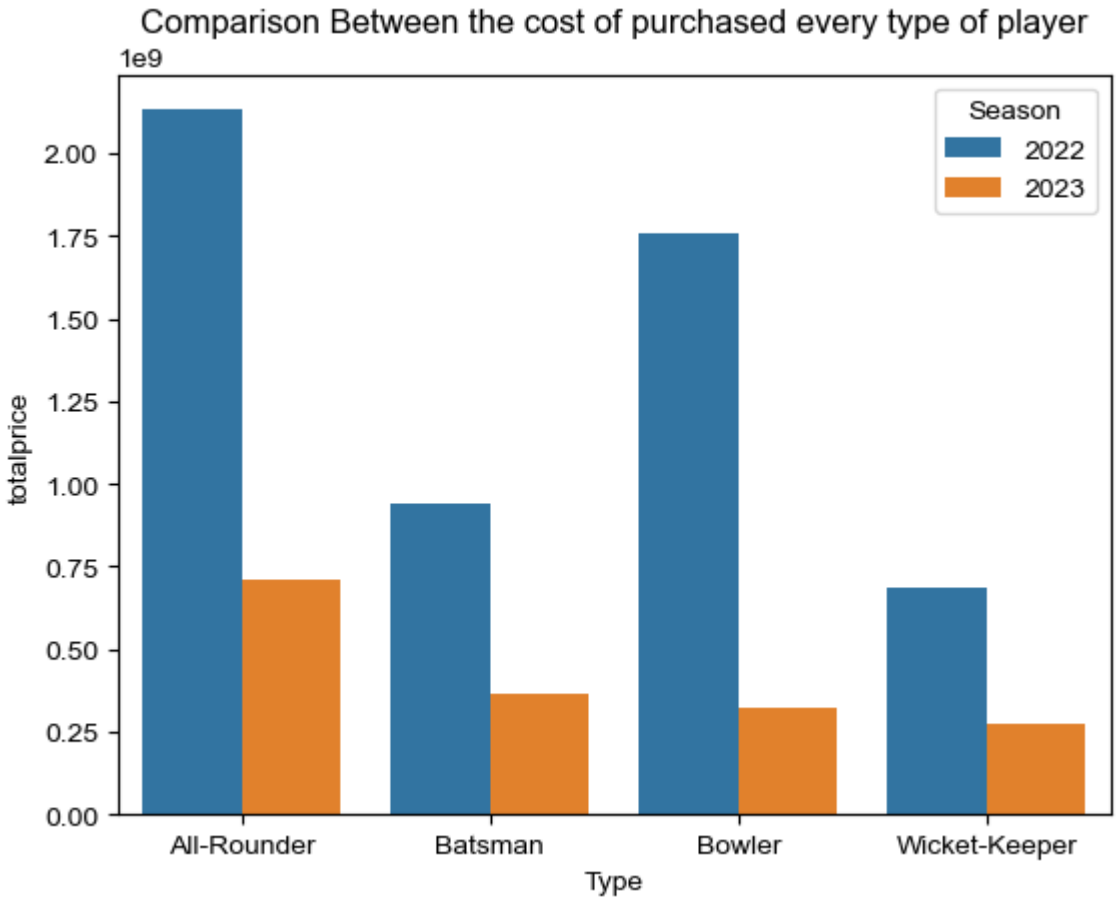
In [29]:
```
data.head()
```

Out[29]:

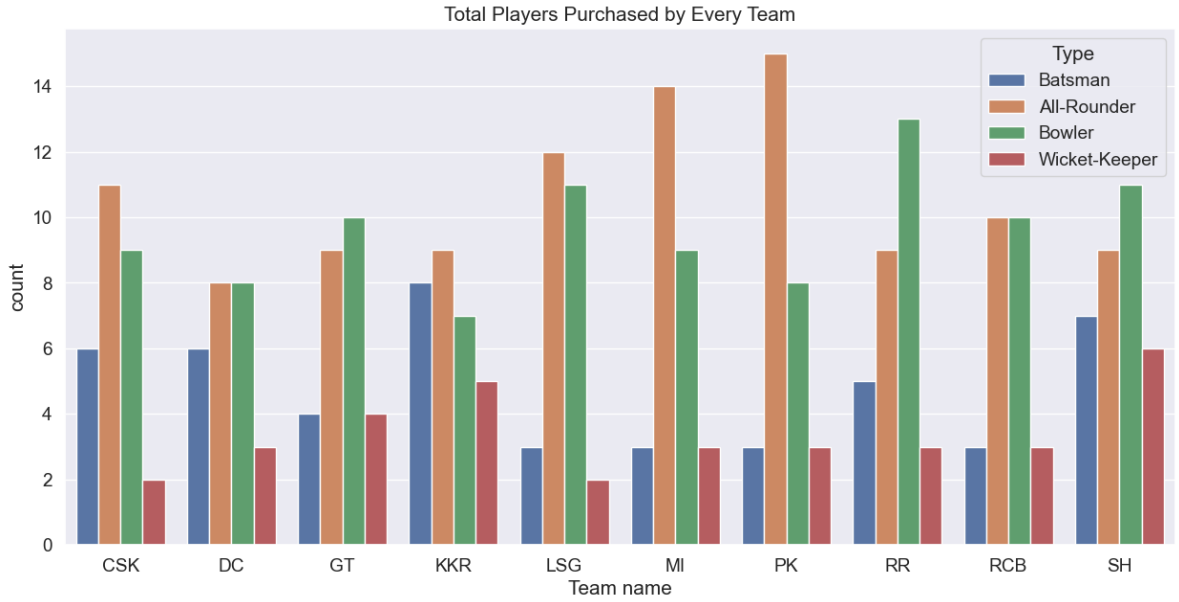
	Season	Name	Nationality	Type	Team	Price	Team name
0	2023	Ajinkya Rahane	Indian	Batsman	Chennai Super Kings	5000000	CSK
1	2023	Bhagath Varma	Indian	All-Rounder	Chennai Super Kings	2000000	CSK
2	2023	Kyle Jamieson	Overseas	Bowler	Chennai Super Kings	10000000	CSK
3	2023	Ajay Mandal	Indian	All-Rounder	Chennai Super Kings	2000000	CSK
4	2023	Nishant Sindhu	Indian	All-Rounder	Chennai Super Kings	6000000	CSK

Visualization

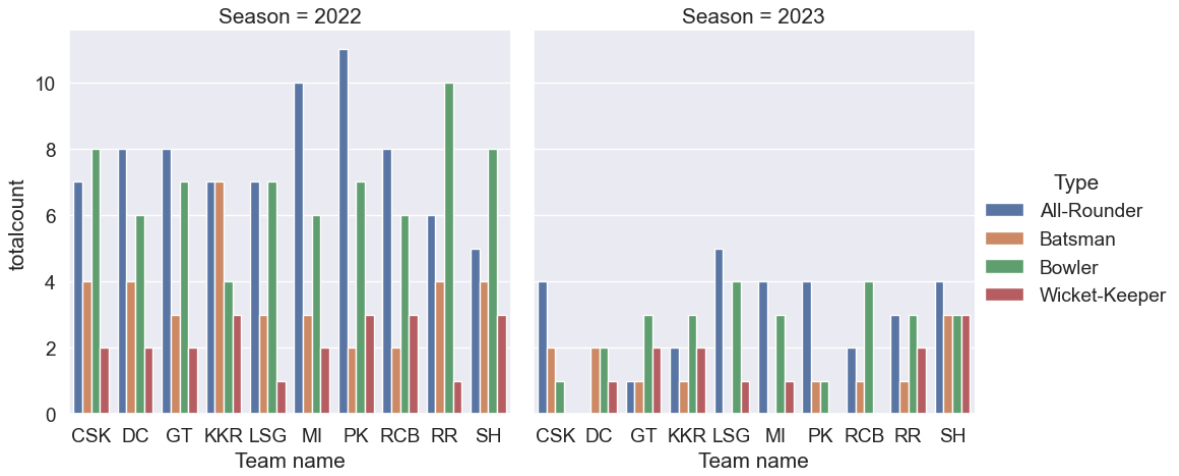
In [30]:
```
ndf=data.groupby(['Type', 'Season']).agg(
    totalprice= ('Price', 'sum')).reset_index()

sns.barplot(data=ndf, x=ndf['Type'],
    y=ndf['totalprice'], hue=ndf['Season']).set_title(
    'Comparison Between the cost of purchased every type of player')
sns.set(font_scale= 1.25)
```



In [31]:
```
fig, ax = plt.subplots(figsize = (15,7))
sns.countplot(data=data, x=data['Team name'], hue= data['Type'], ax=ax).set_ti
    'Total Players Purchased by Every Team')
sns.set(font_scale = 1.25)
```

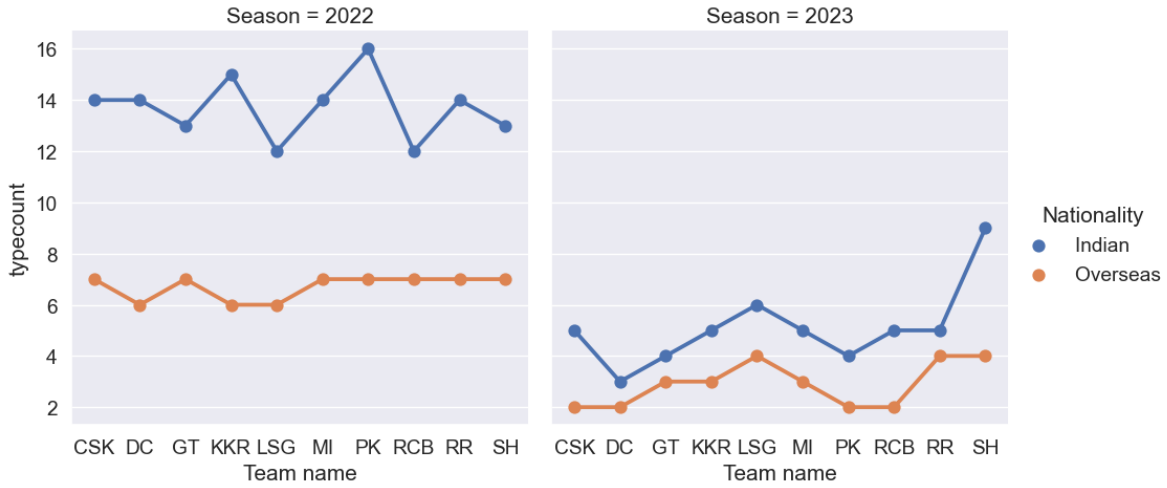


In [32]:
```
ndf=data.groupby(['Season', 'Team name', 'Type']).agg(
    totalcount= ('Type', 'count')).reset_index()

sns.catplot(data=ndf, x='Team name', y='totalcount',
            hue='Type', col = 'Season', kind = 'bar')
sns.set(font_scale= 1.25)
```



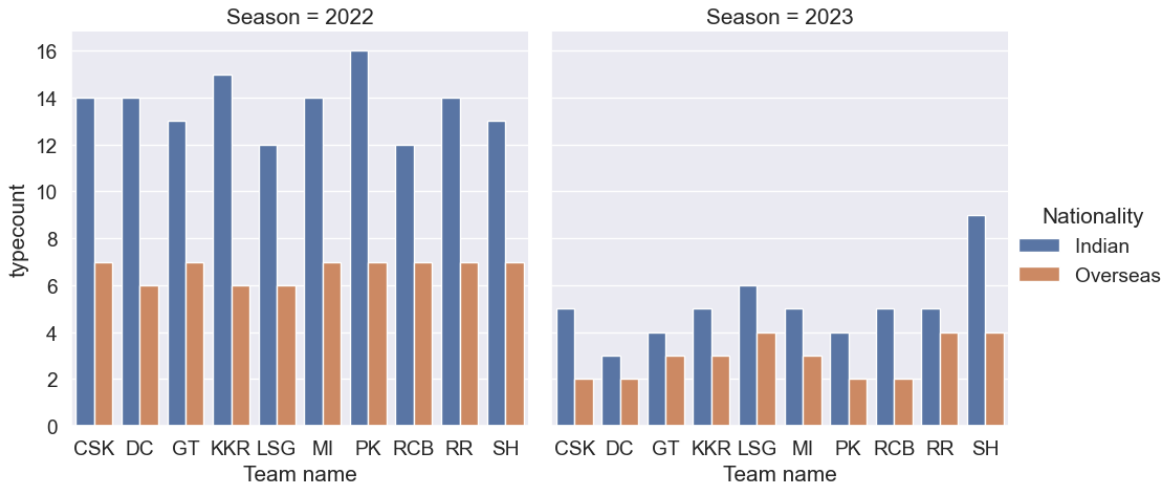
Point Plot

In [33]:
```
ndf=data.groupby(['Season', 'Team name', 'Nationality']).agg(
    typecount= ('Nationality', 'count')).reset_index()

sns.catplot(data=ndf, x='Team name', y='typecount', hue='Nationality',
            col = 'Season', kind = 'point')
sns.set(font_scale= 1.25)
```

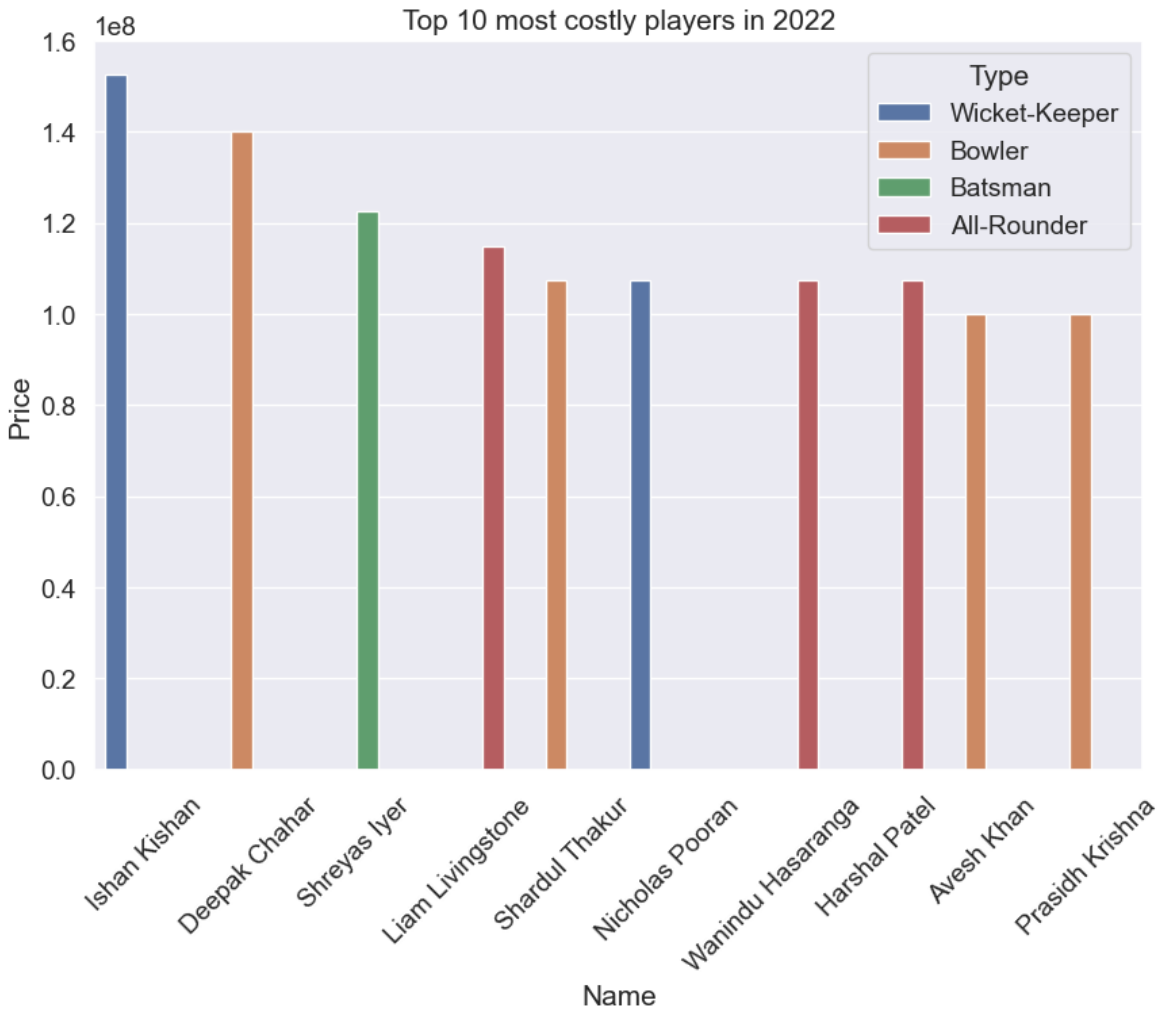


Bar Plot

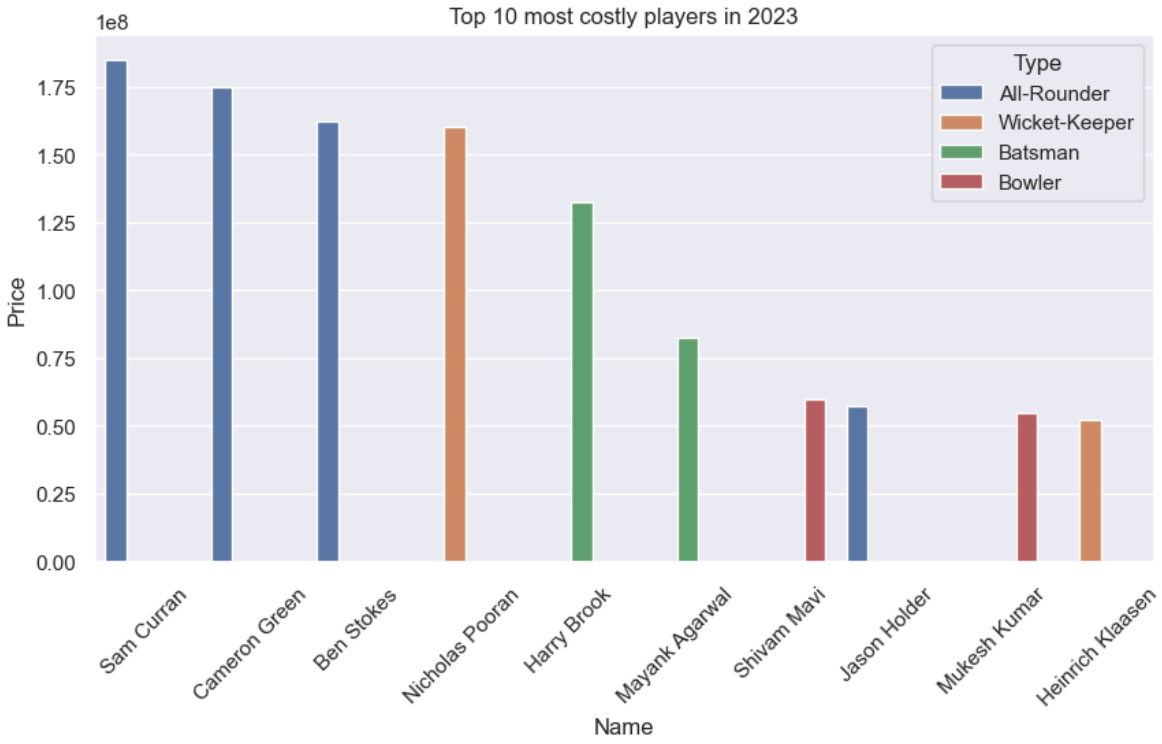
In [34]:
```
ndf=data.groupby(['Season', 'Team name', 'Nationality']).agg(
    typecount= ('Nationality', 'count')).reset_index()

sns.catplot(data=ndf, x='Team name', y='typecount', hue='Nationality',
            col = 'Season', kind = 'bar')
sns.set(font_scale= 1.25)
```



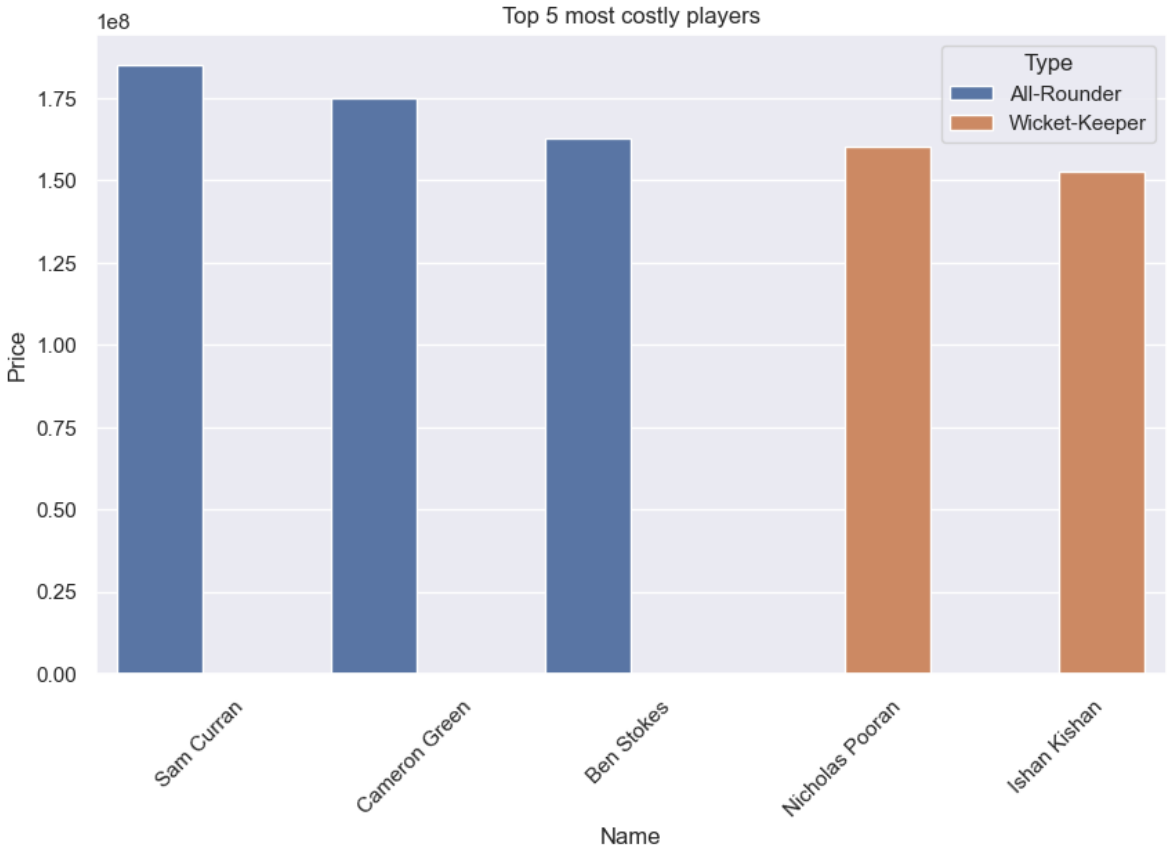
In [35]:
```
exp_player_data = data.loc[data.Season == 2022].sort_values(
    ['Price'], ascending = False).head(10)

fig, ax = plt.subplots (figsize = (10,7))

sns.barplot(data = exp_player_data, x = 'Name', y = 'Price',
    hue='Type', ax= ax).set_title('Top 10 most costly players in 2022')
plt.xticks(rotation = 45)
sns.set(font_scale=1)
```



In [36]:
```
exp_player_data = data.loc[data.Season == 2023].sort_values(
    ['Price'], ascending = False).head(10)

fig, ax = plt.subplots (figsize = (10,5))

sns.barplot(data = exp_player_data, x = 'Name', y = 'Price',
        hue='Type', ax= ax).set_title('Top 10 most costly players in 2023')
plt.xticks(rotation = 45)
sns.set(font_scale=1)
```



In [37]:
```
fig, ax = plt.subplots (figsize = (10,6))
exp_player_data = data.sort_values(['Price'], ascending = False).head()

sns.barplot(data = exp_player_data, x = 'Name', y = 'Price',
        hue='Type', ax= ax).set_title('Top 5 most costly players')
plt.xticks(rotation = 45)
sns.set(font_scale=1)
```



In [ ]:
```
```