

Introduction to categorical plots using Seaborn

WORKING WITH CATEGORICAL DATA IN PYTHON



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Our third dataset

- Name: Las Vegas TripAdvisor Reviews - reviews
- Rows: 504
- Columns: 20

Las Vegas reviews

```
reviews.info()
```

```
RangeIndex: 504 entries, 0 to 503
Data columns (total 20 columns):
#   Column                Non-Null Count  Dtype
#   -----
0   User country           504 non-null    object
...
6   Traveler type          504 non-null    object
7   Pool                   504 non-null    object
8   Gym                    504 non-null    object
9   Tennis court           504 non-null    object
...
dtypes: int64(7), object(13)
memory usage: 78.9+ KB
```

¹ <https://www.kaggle.com/crawford/las-vegas-tripadvisor-reviews>

Seaborn

- [Introduction to Data Visualization with Seaborn](#)
- [Intermediate Data Visualization with Seaborn](#)

Categorical plots:

```
import seaborn as sns
import matplotlib.pyplot as plt
```

```
sns.catplot(...)
```

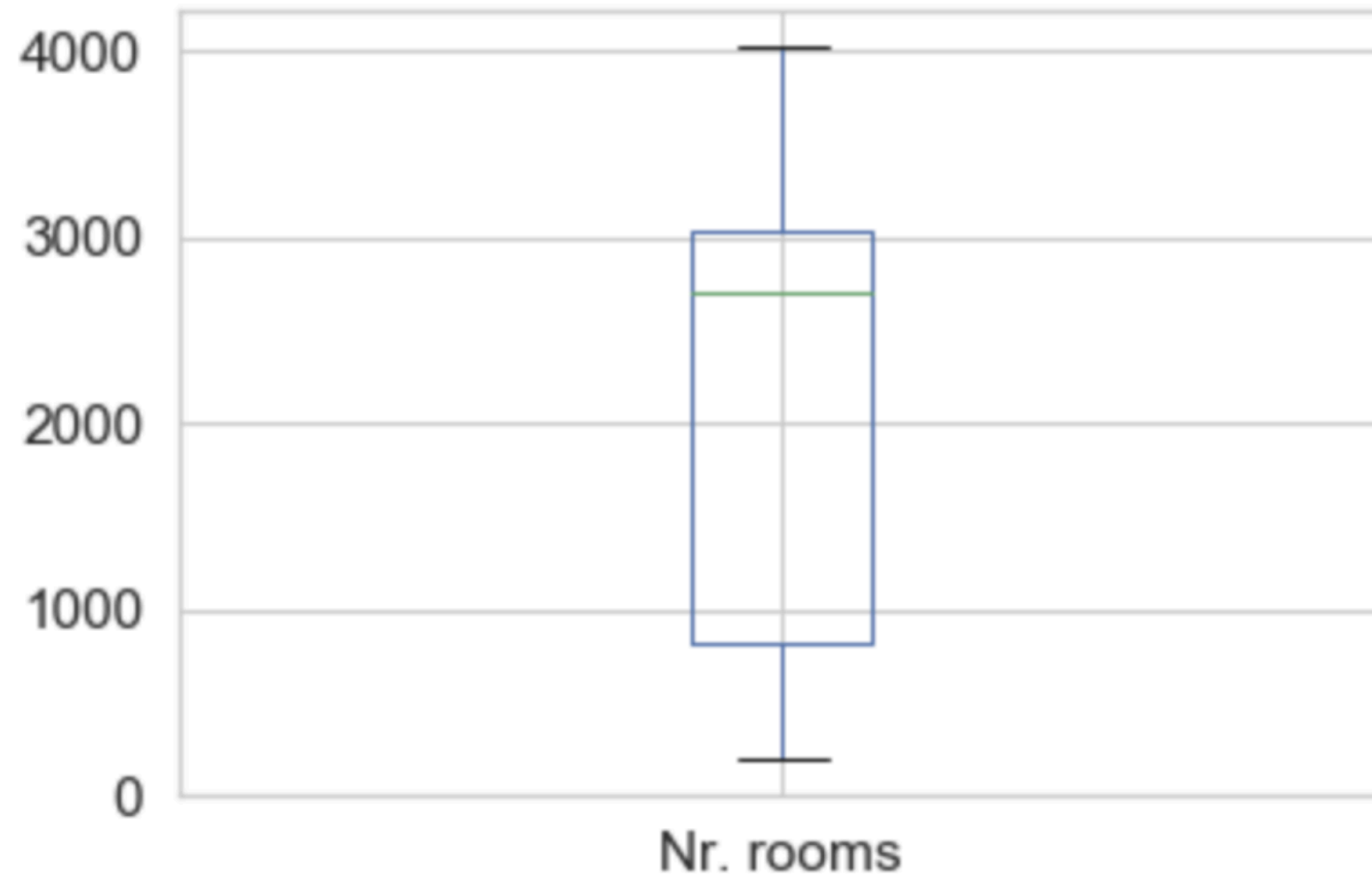
```
plt.show()
```

The catplot function

Parameters:

- `x` : name of variable in `data`
- `y` : name of variable in `data`
- `data` : a DataFrame
- `kind` : type of plot to create - one of: `"strip"` , `"swarm"` , `"box"` , `"violin"` , `"boxen"` , `"point"` , `"bar"` , or `"count"`

Box plot



[Box plot wiki page](#)

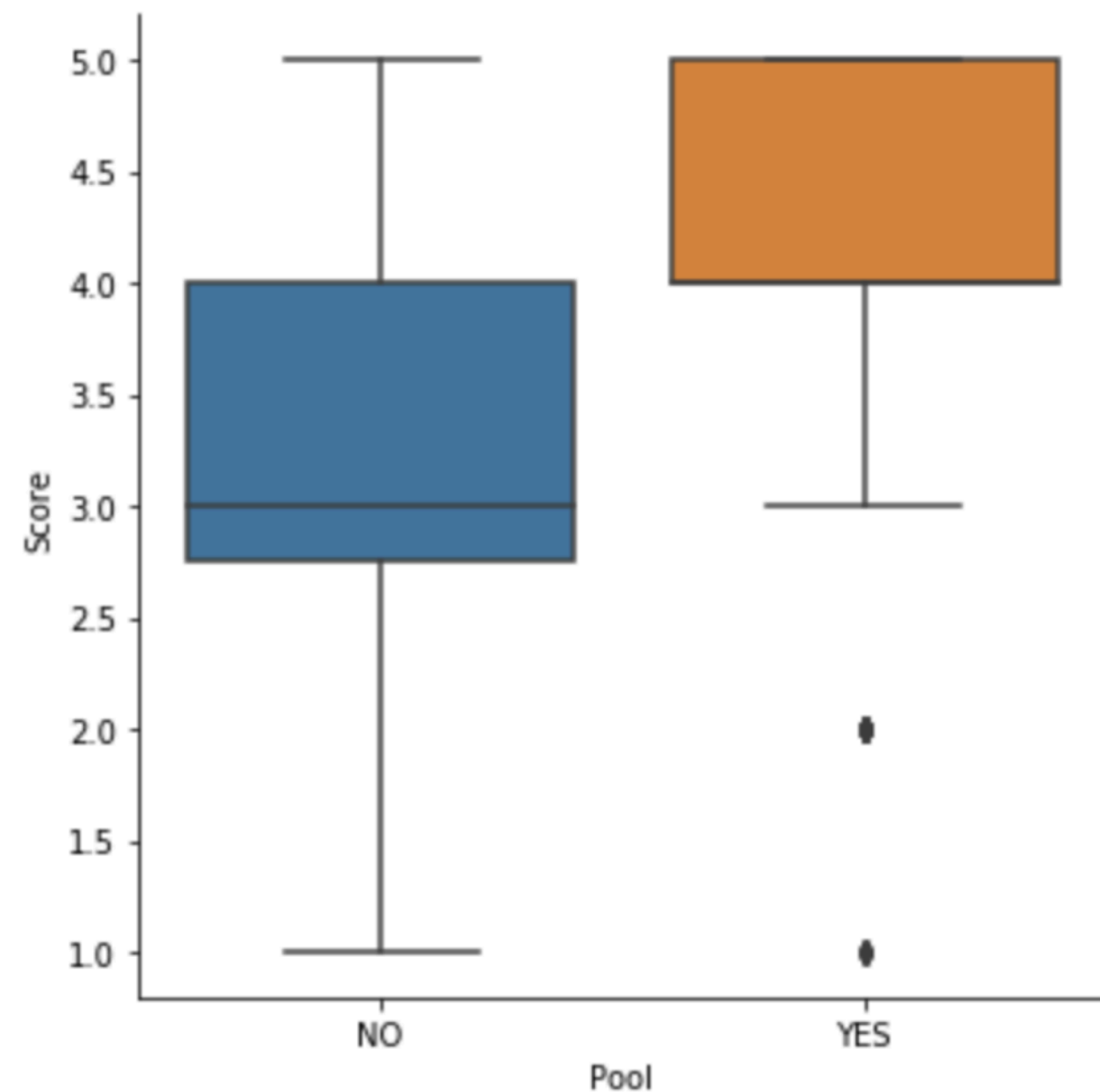
Review score

```
reviews["Score"].value_counts()
```

```
5    227  
4    164  
3     72  
2     30  
1     11
```

Box plot example

```
sns.catplot(  
    x="Pool",  
    y="Score",  
    data=reviews,  
    kind="box"  
)  
plt.show()
```

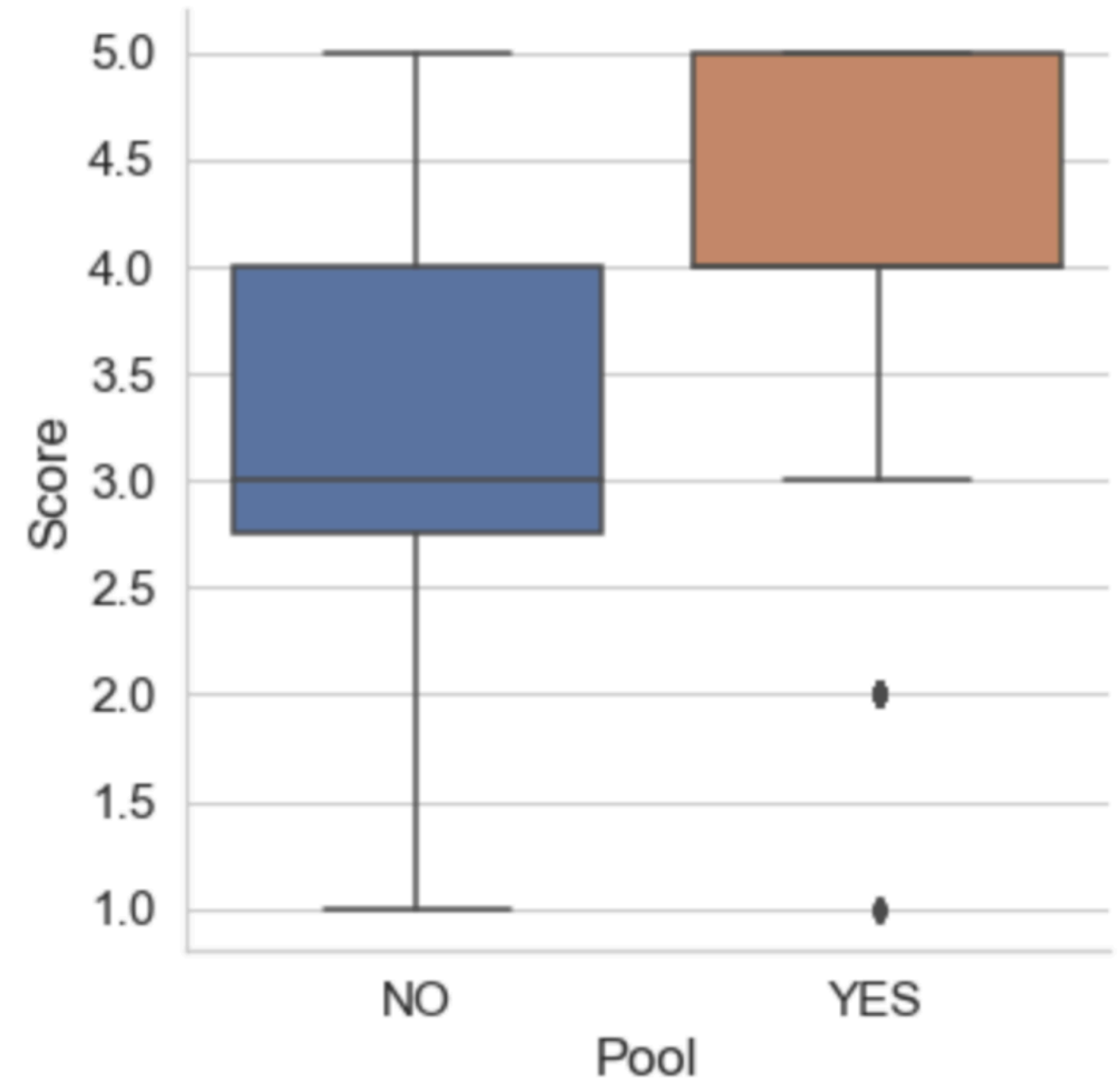


Two quick options

```
# Setting font size and plot background
sns.set(font_scale=1.4)
sns.set_style("whitegrid")
```

```
sns.catplot(
    x="Pool",
    y="Score",
    data=reviews,
    kind="box"
)

plt.show()
```



Boxplot practice

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Seaborn bar plots

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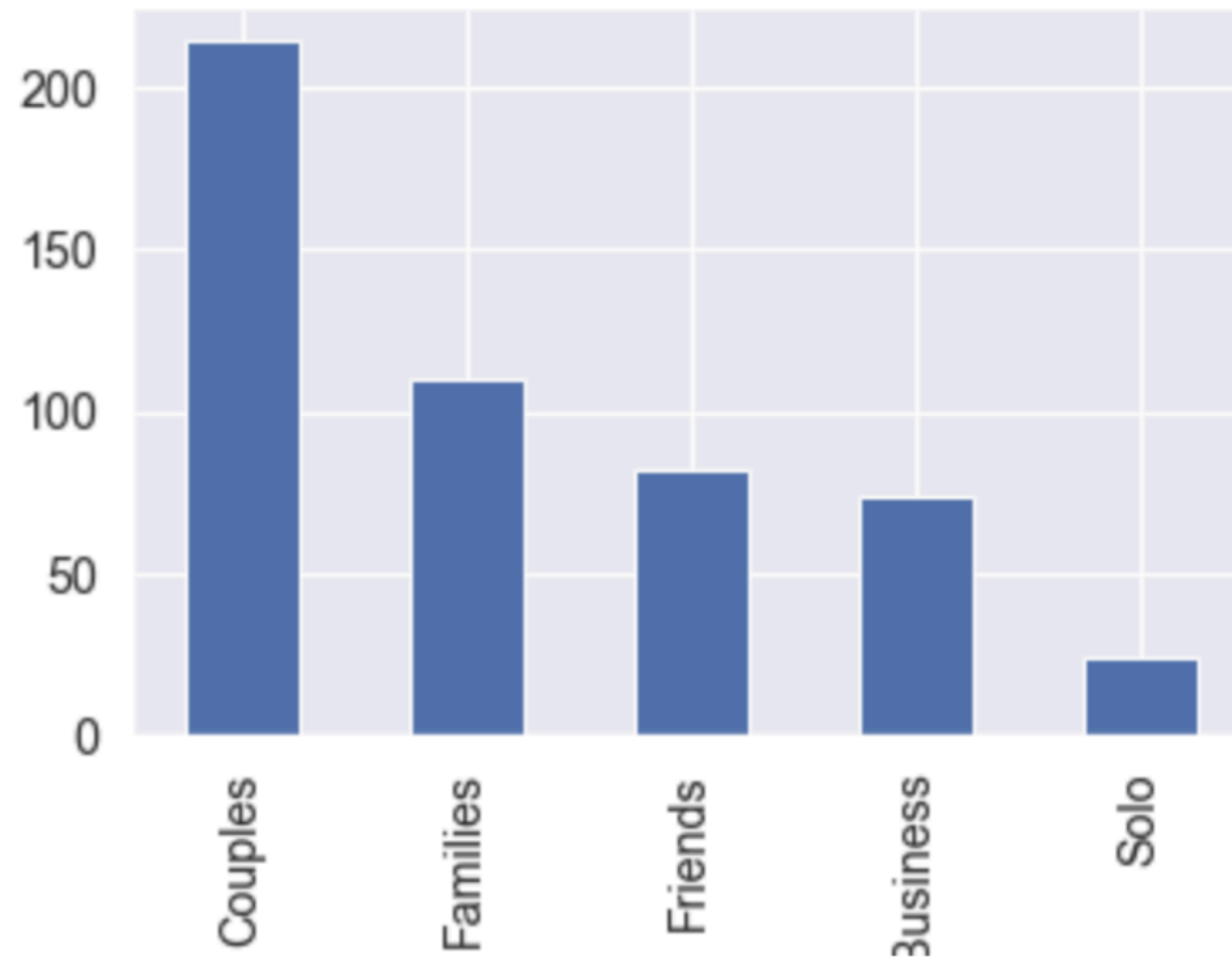
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Traditional bar chart

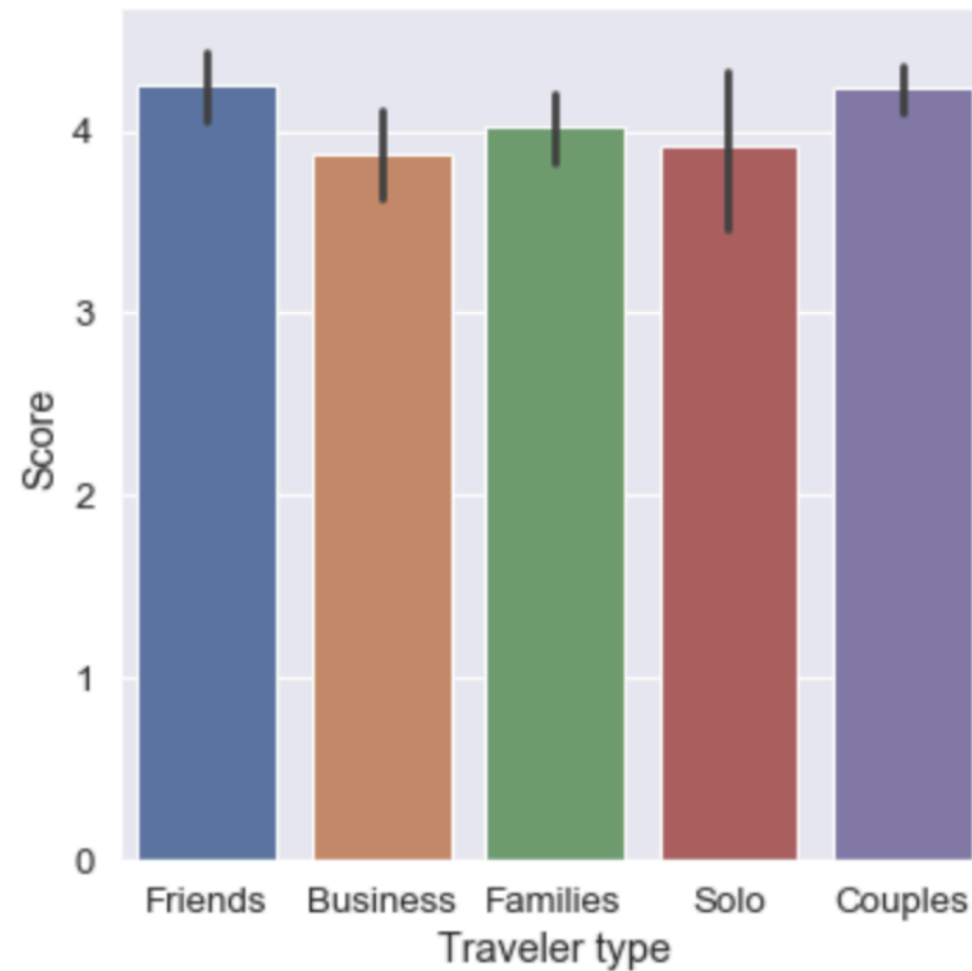
```
# Code provided for clarity
```

```
reviews["Traveler type"].value_counts().plot.bar()
```



The syntax

```
sns.set(font_scale=1.3)
sns.set_style("darkgrid")
sns.catplot(x="Traveler type", y="Score", data=reviews, kind="bar")
```



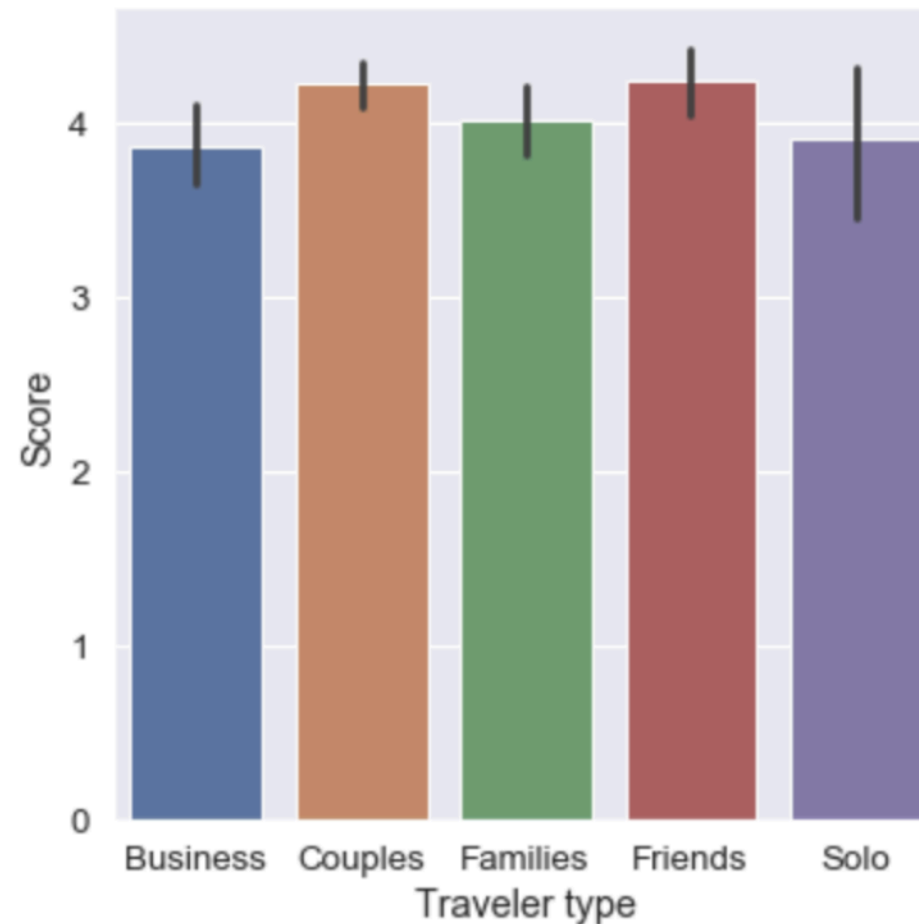
Ordering your categories

```
reviews["Traveler type"] = reviews["Traveler type"].astype("category")  
reviews["Traveler type"].cat.categories
```

```
Index(['Business', 'Couples', 'Families', 'Friends', 'Solo'], dtype='object')
```

Updated visualization

```
sns.catplot(x="Traveler type", y="Score", data=reviews, kind="bar")
```



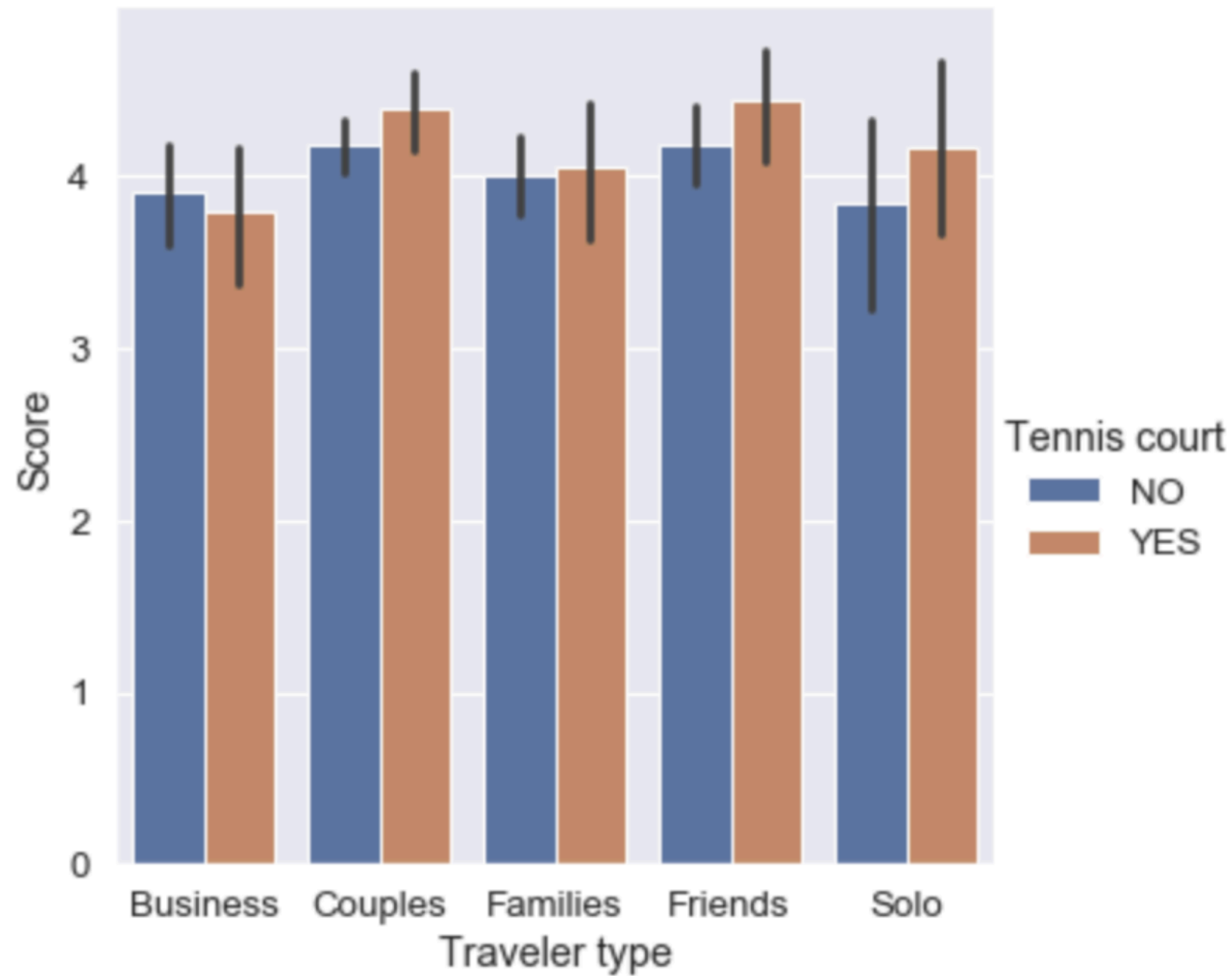
- Note: `catplot()` has an `order` parameter

The hue parameter

- `hue` :
 - name of a variable in `data`
 - used to split the data by a second category
 - also used to color the graphic

```
sns.set(font_scale=1.2)
sns.set_style("darkgrid")
sns.catplot(x="Traveler type", y="Score", data=reviews, kind="bar",
            hue="Tennis court") # <--- new parameter
```


Bar plot across two variables



Bar plot practice

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Point and count plots

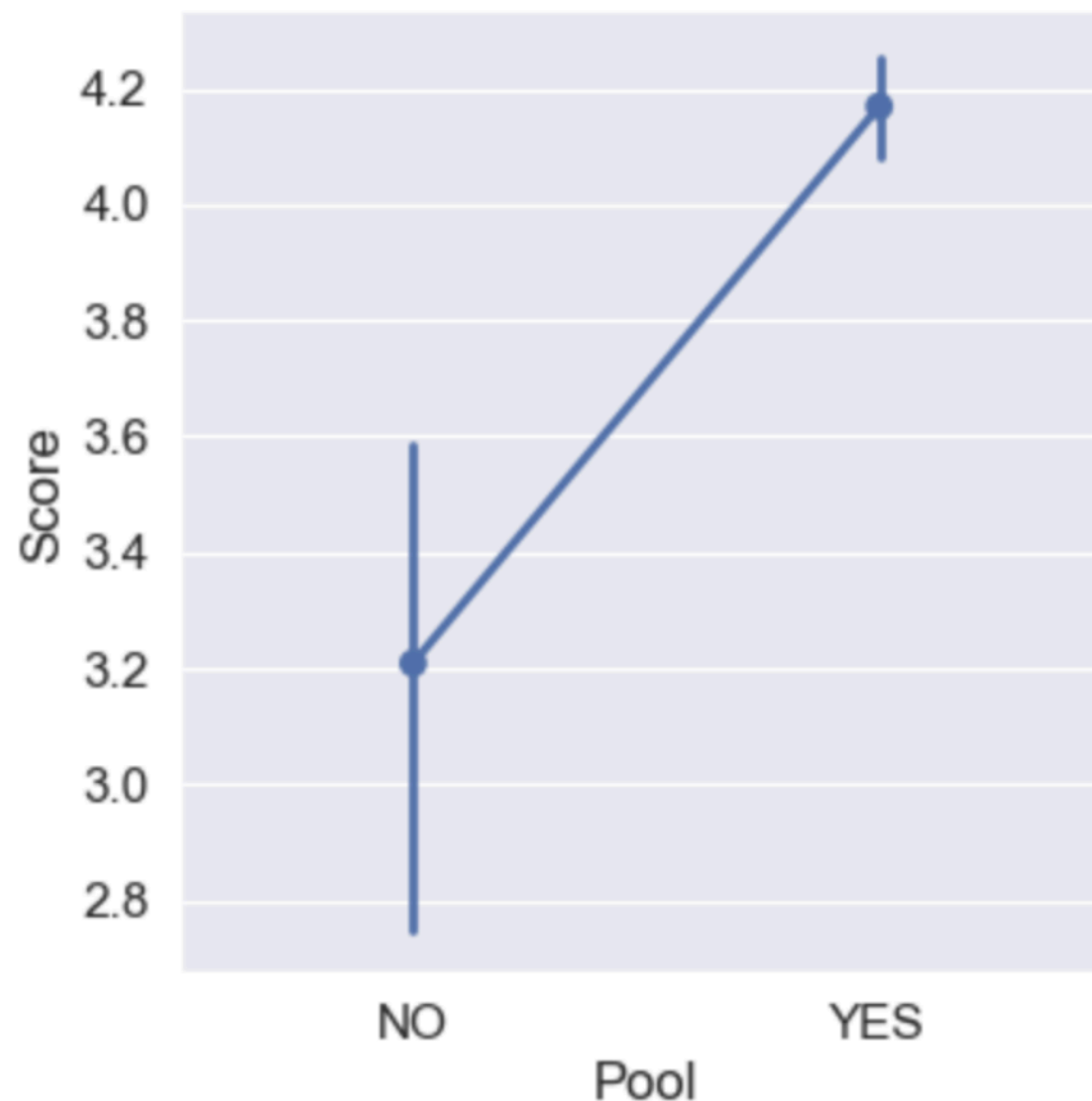
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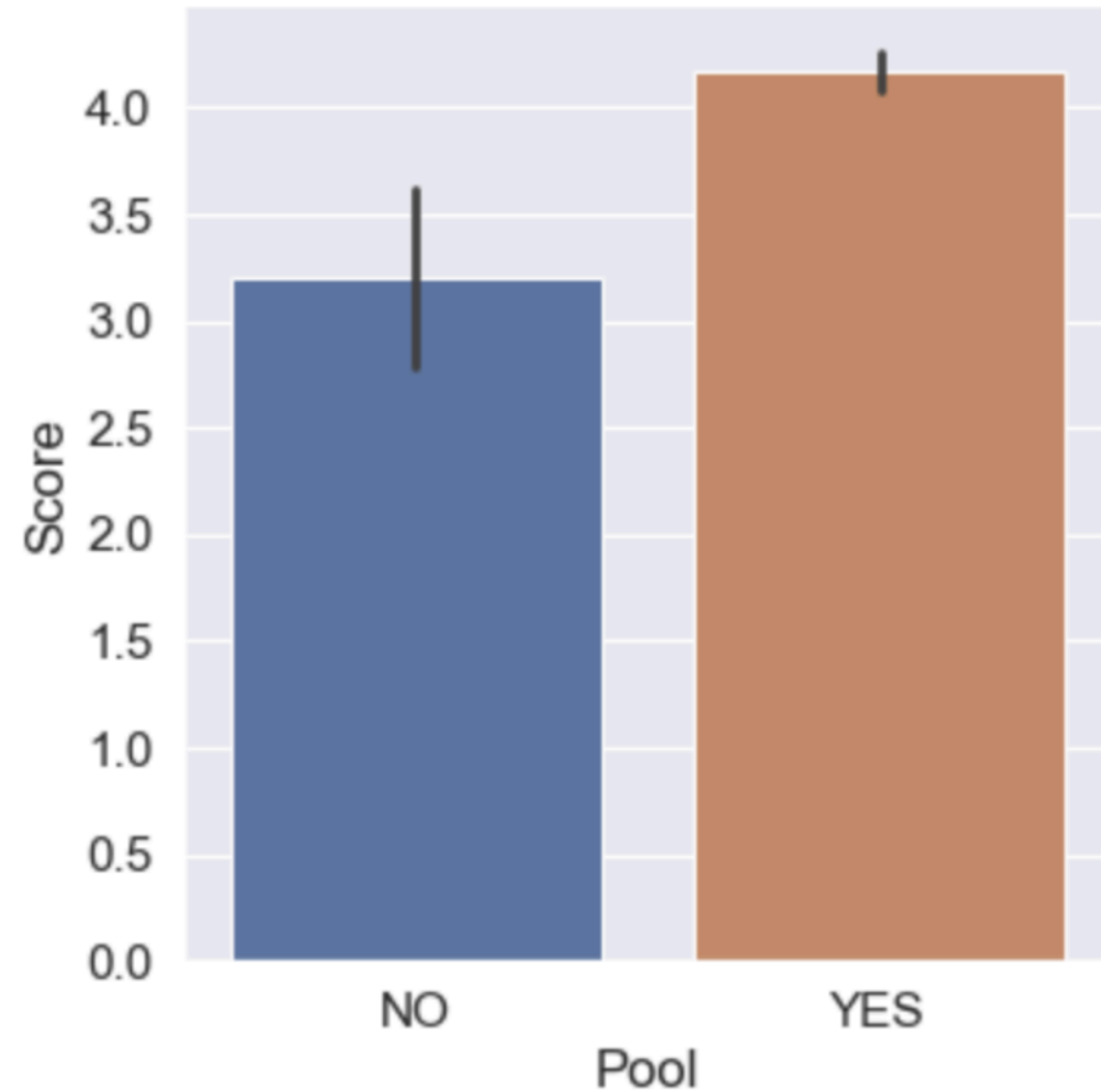
Point plot example

```
sns.catplot(x="Pool", y="Score", data=reviews, kind="point") # <--- updated
```

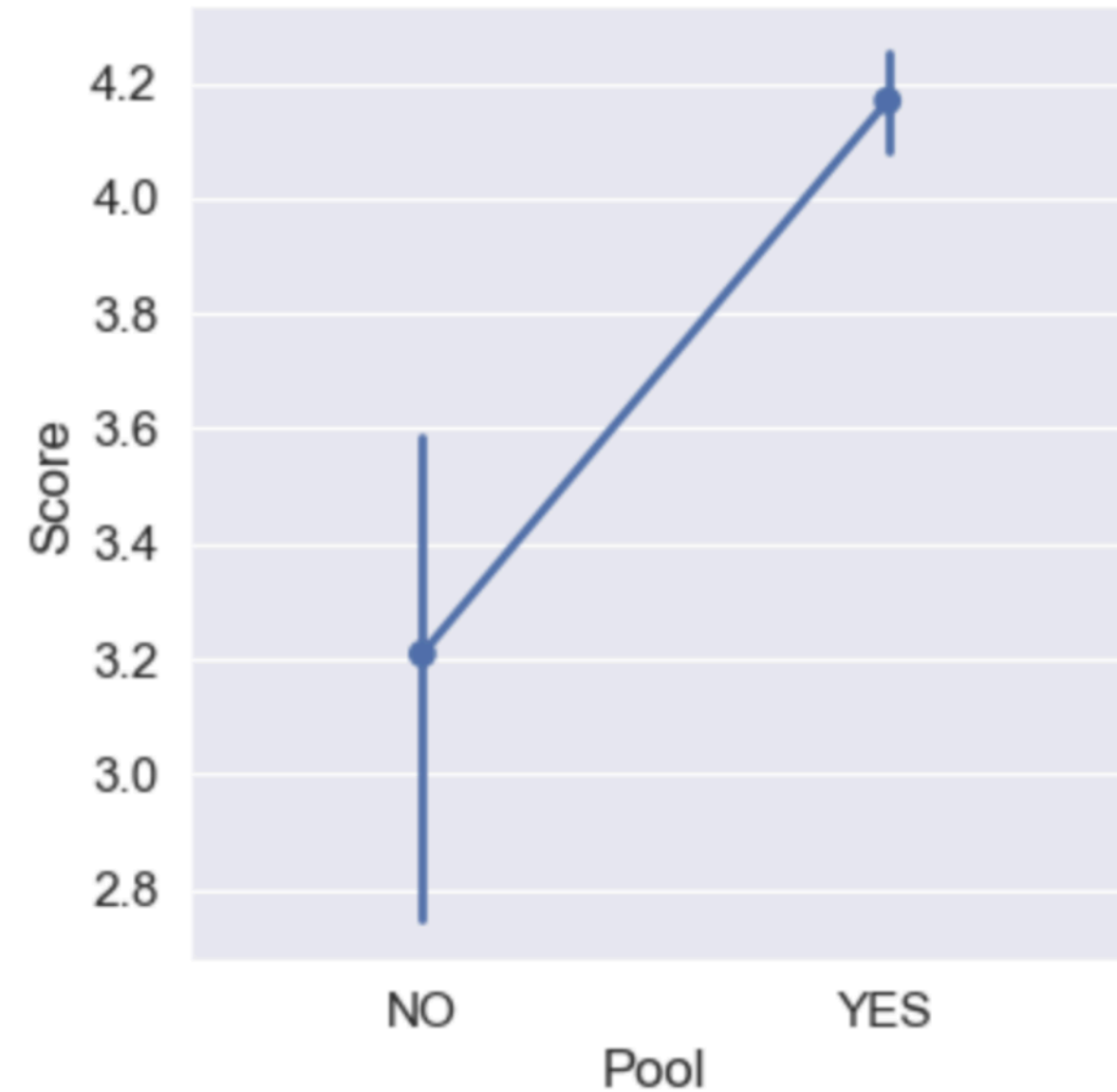


Bar plot vs. point plot

Bar plot

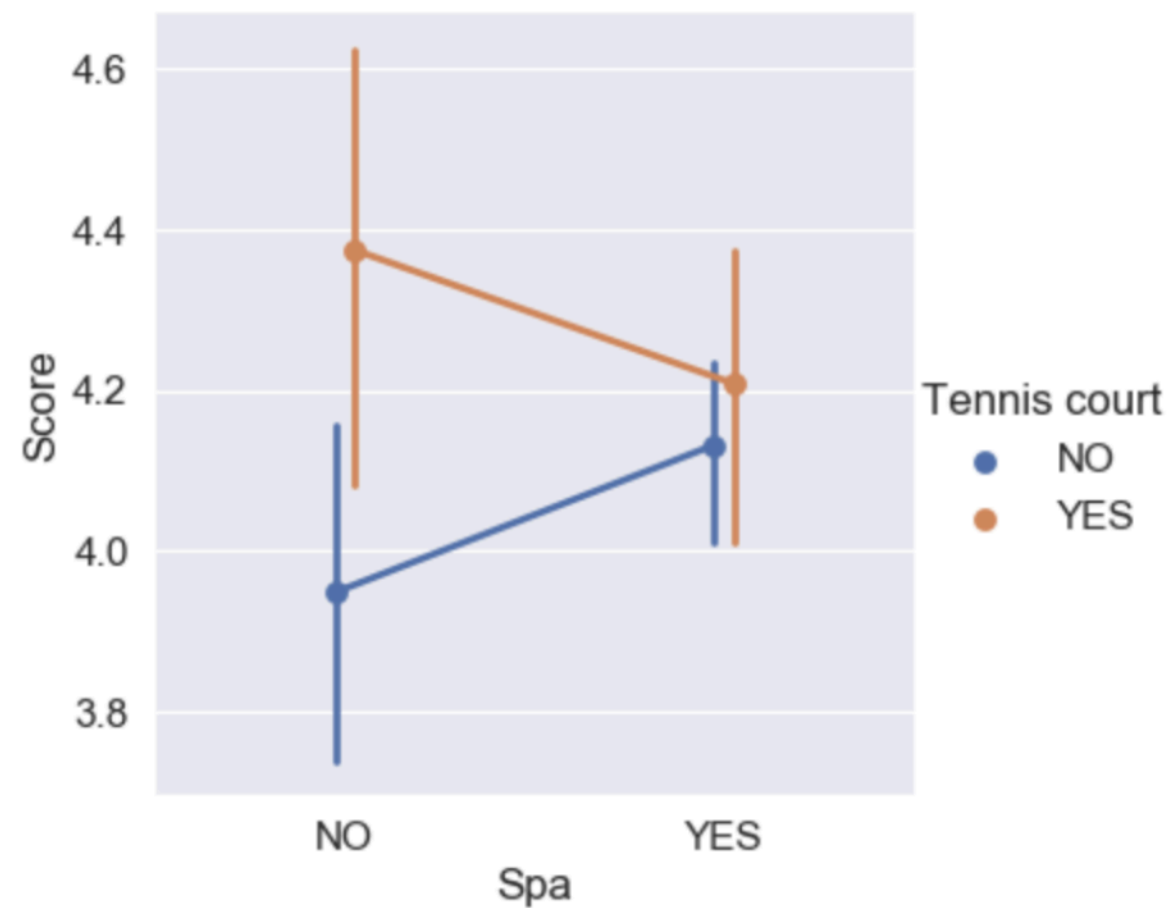


Point plot



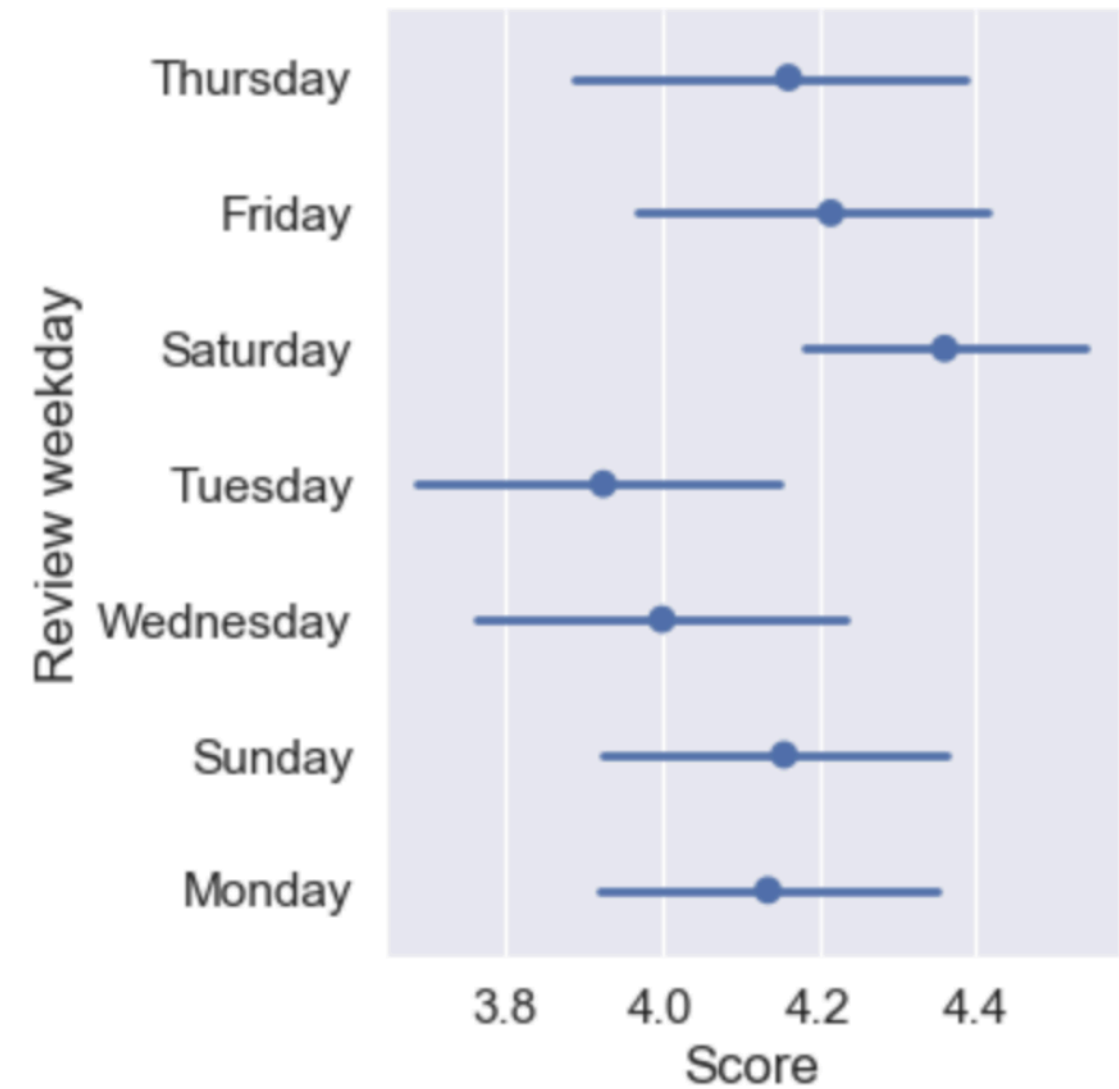
Point plot with hue

```
sns.catplot(x="Spa", y="Score", data=reviews, kind="point",  
            hue="Tennis court", dodge=True # < --- New Parameter!  
)
```



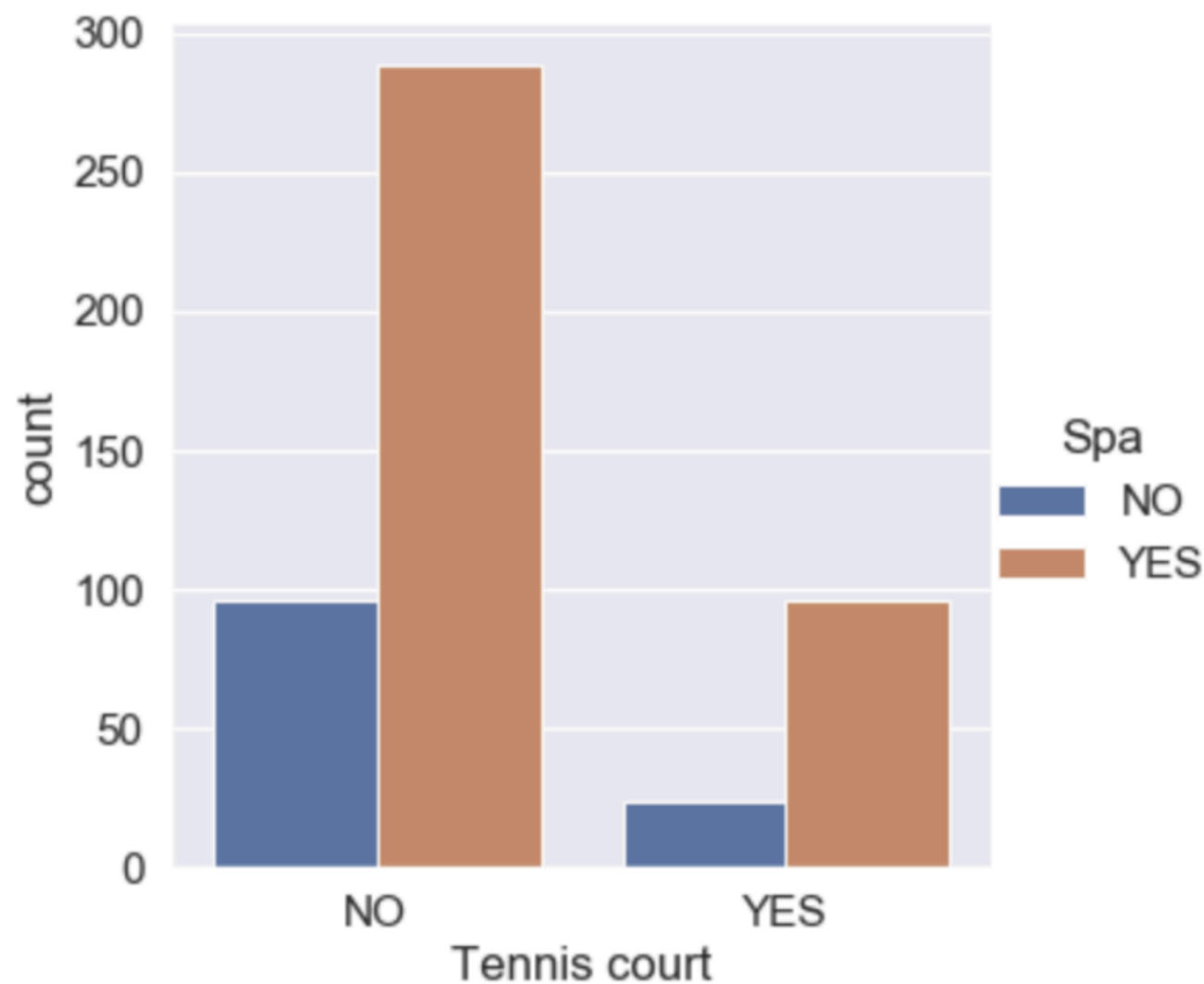
Using the join parameter

```
sns.catplot(x="Score",  
            y="Review weekday",  
            data=reviews,  
            kind="point",  
            join=False # < --- New!  
            )
```



One last catplot type

```
sns.catplot(x="Tennis court", data=reviews, kind="count", hue="Spa")
```



Time to practice!

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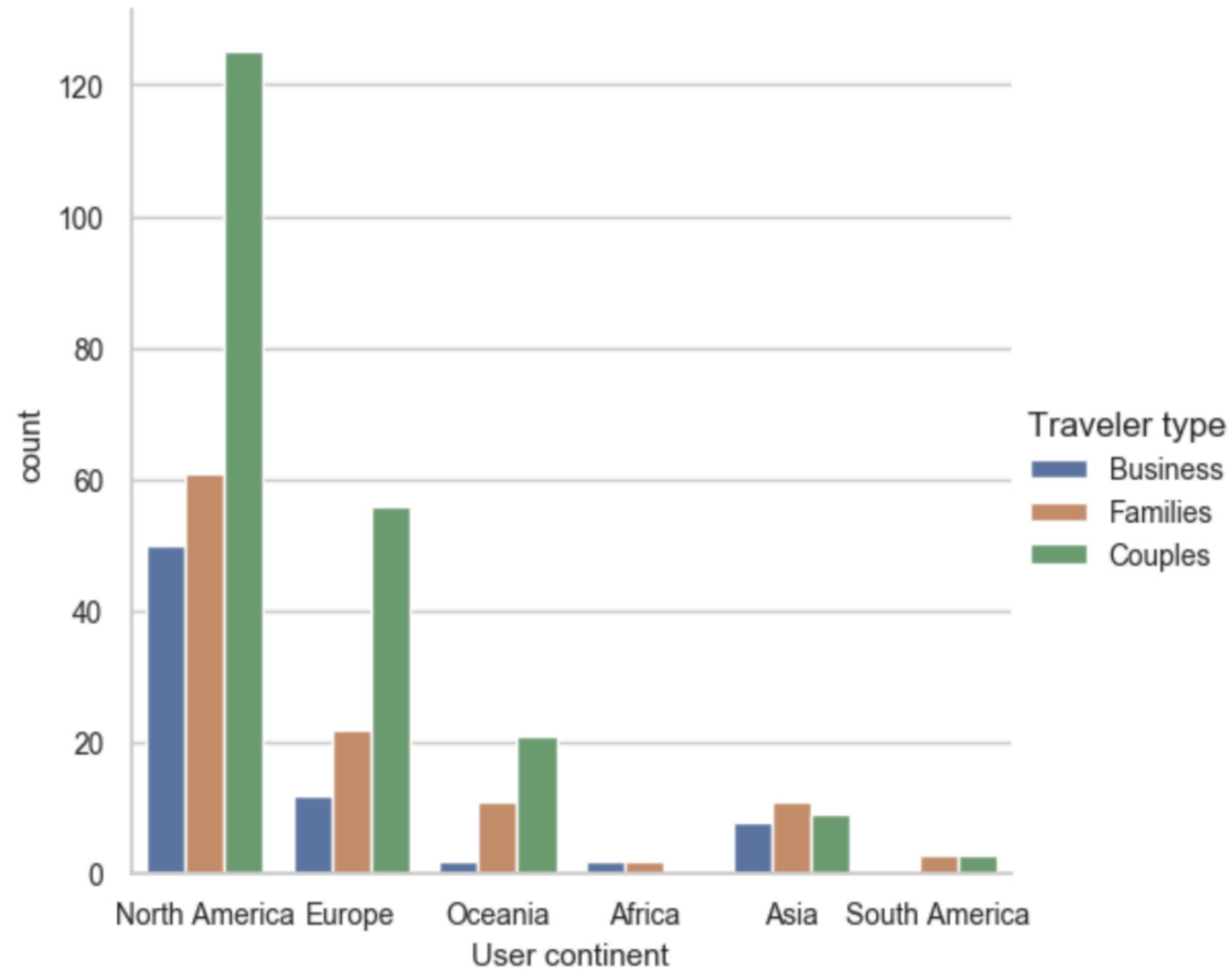
Additional catplot() options

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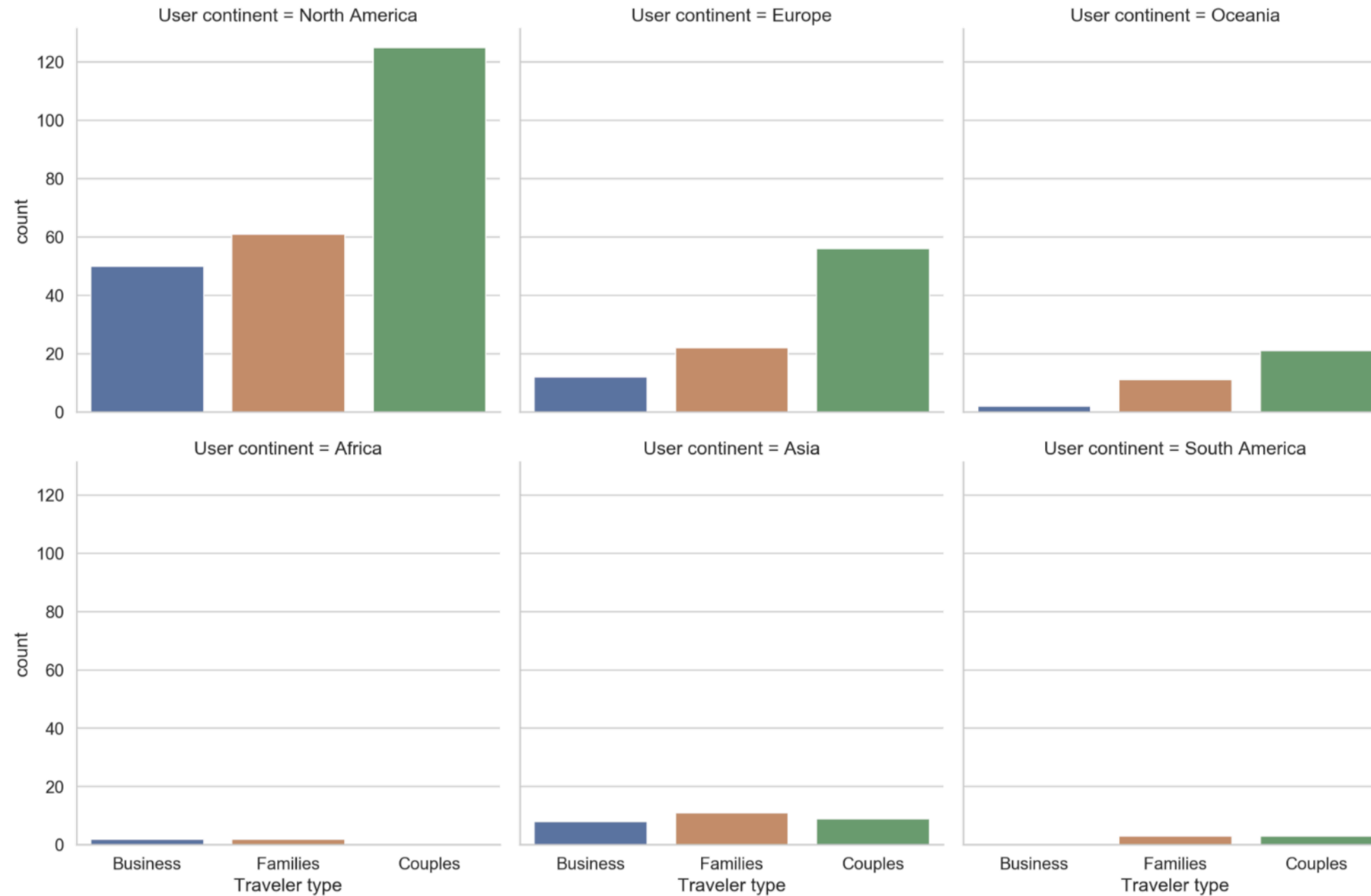


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Difficulties with categorical plots



Using the `catplot()` facetgrid



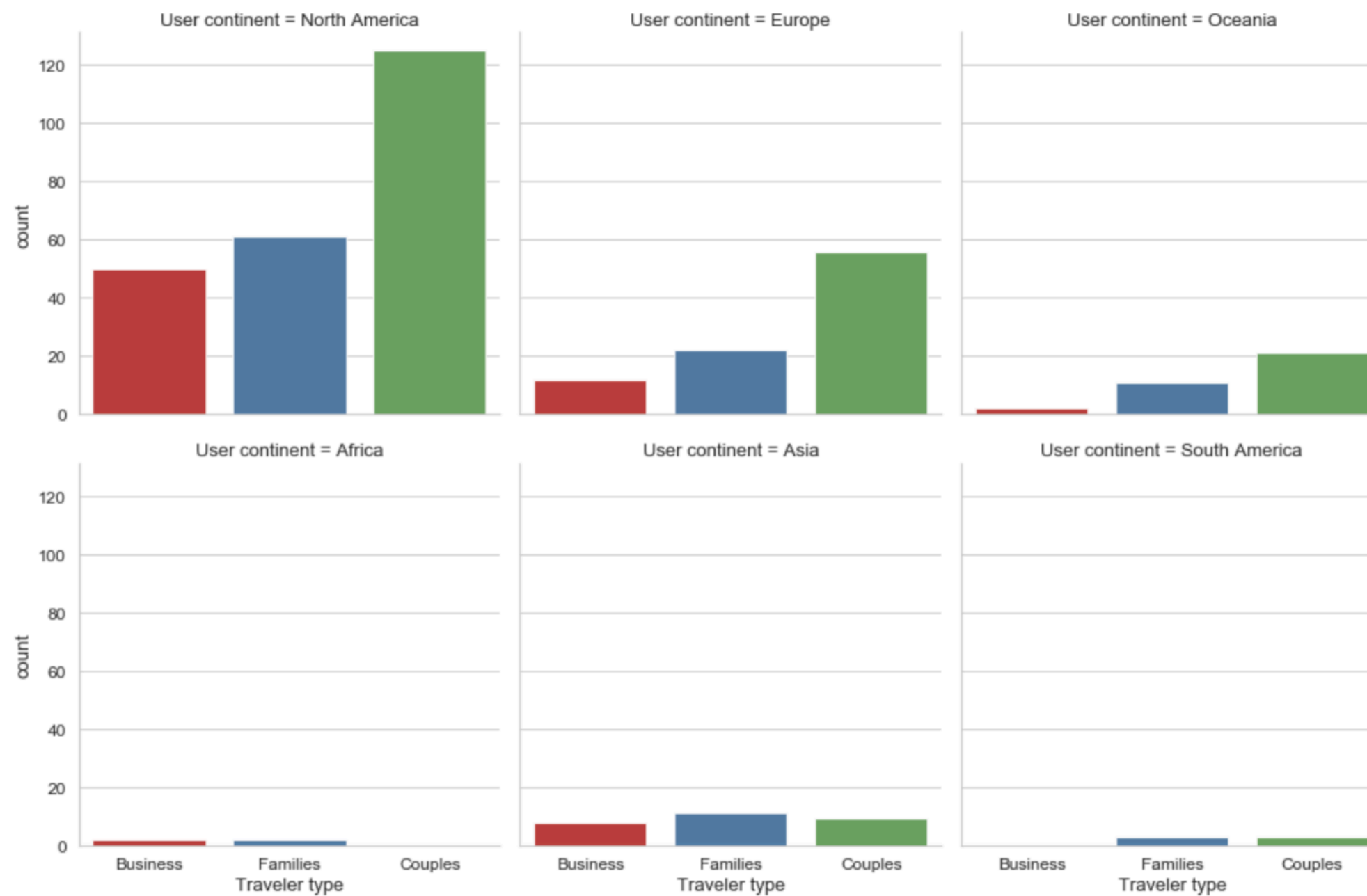
Using different arguments

```
sns.catplot(x="Traveler type", kind="count",  
            col="User continent",  
            col_wrap=3,  
            palette=sns.color_palette("Set1"), data=reviews)
```

- `x` : "Traveler type"
- `kind` : "count"
- `col` : "User continent"
- `col_wrap` : 3
- `palette` : `sns.color_palette("Set1")`
- Common colors: "Set" , "Set2" , "Tab10" , "Paired"

¹ http://seaborn.pydata.org/tutorial/color_palettes.html

One more look



Updating plots

- Setup: save your graphic as an object: `ax`
- Plot title: `ax.fig.suptitle("My title")`
- Axis labels: `ax.set_axis_labels("x-axis-label", "y-axis-label")`
- Title height: `plt.subplots_adjust(top=.9)`

```
ax = sns.catplot(x="Traveler type", col="User continent", col_wrap=3,  
                kind="count", palette=sns.color_palette("Set1"), data=reviews)  
ax.fig.suptitle("Hotel Score by Traveler Type & User Continent")  
ax.set_axis_labels("Traveler Type", "Number of Reviews")  
plt.subplots_adjust(top=.9)  
plt.show()
```

Finished product



catplot() practice

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