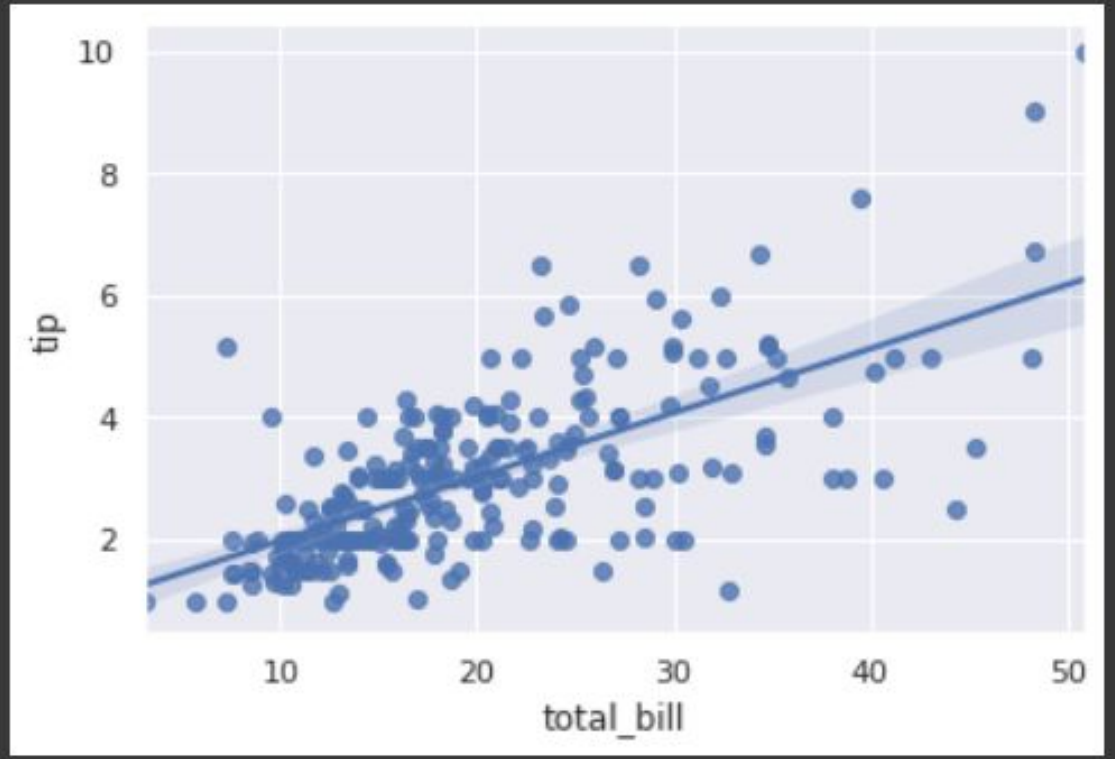
Regression plots

Seaborn

regplot()

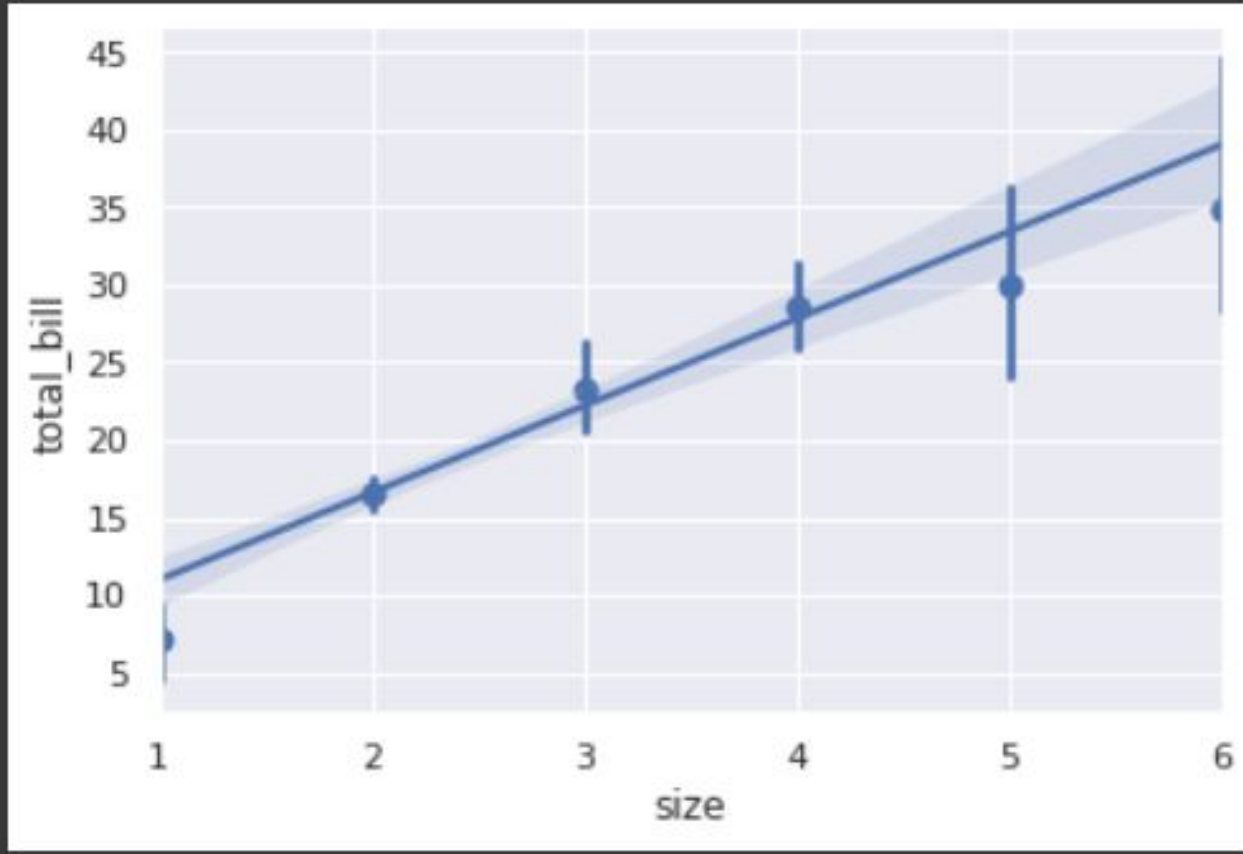
```
[2]  sns.set(color_codes=True)
     tips = sns.load_dataset("tips")
```

```
[3]  sns.regplot(x="total_bill", y="tip", data=tips);
```



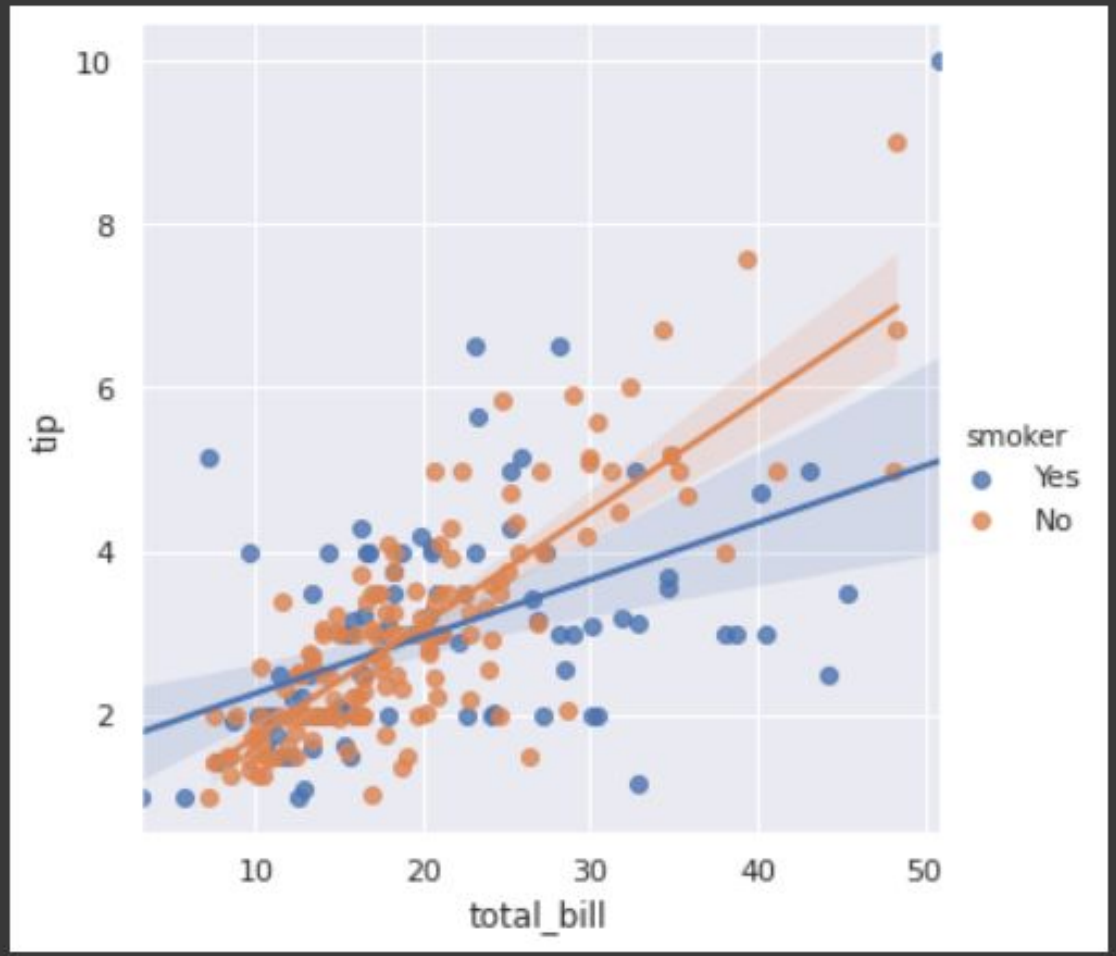
regplot()

```
ax = sns.regplot(x="size", y="total_bill", data=tip
                 x_estimator=np.mean);
```



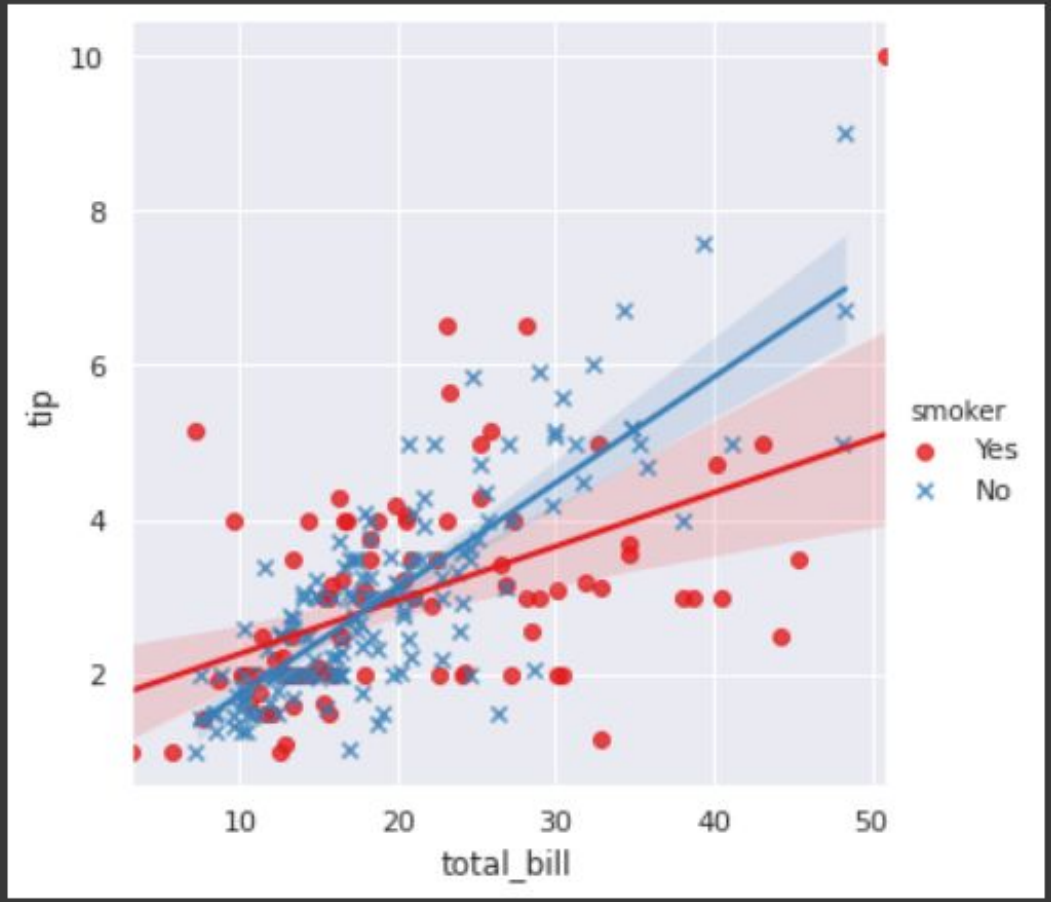
lmplot()

```
] sns.lmplot(x="total_bill", y="tip", hue="smoker", data=tips
```



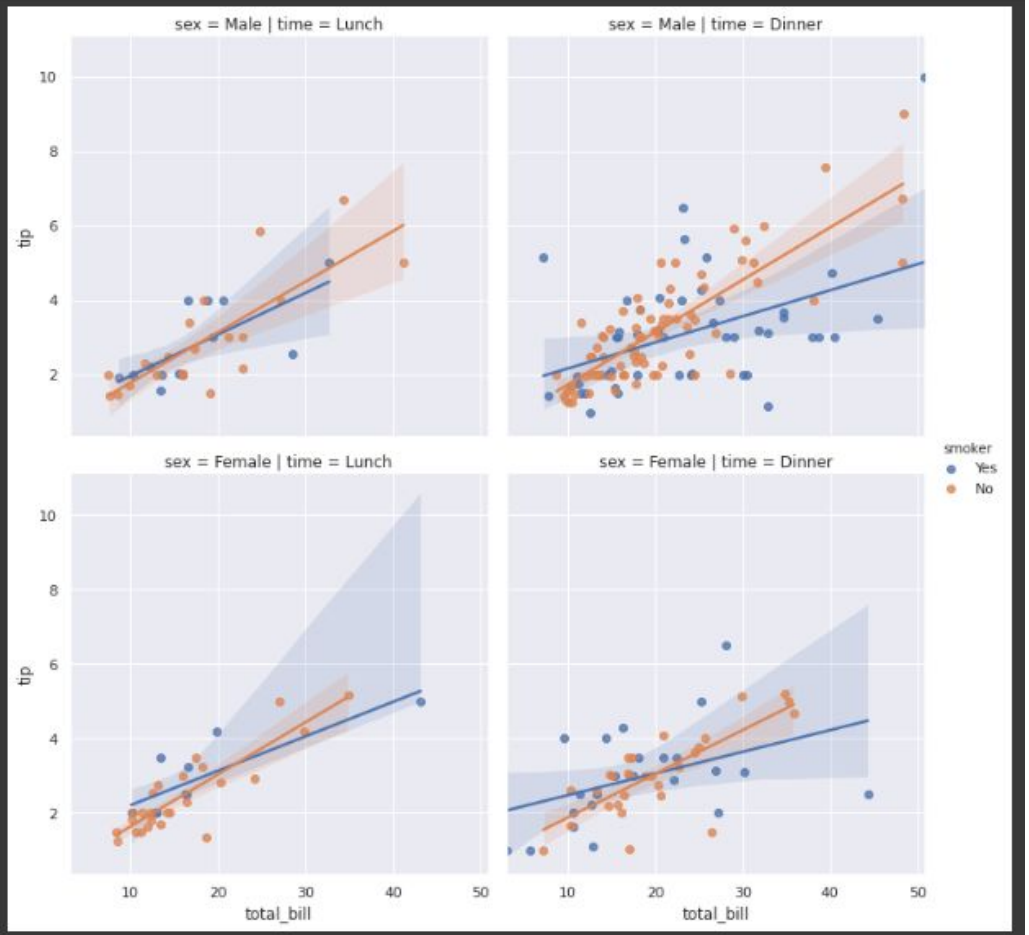
lmplot()

```
[6]  sns.lmplot(x="total_bill", y="tip", hue="smoker", data=tips,
                markers=["o", "x"], palette="Set1");
```



Implot()

```
[8]  sns.lmplot(x="total_bill", y="tip", hue="smoker",
                col="time", row="sex", data=tips);
```



Advantages & Disadvantages

Advantages:

- **Simple and easy to understand**
- **Cheap computational cost**
- **Ground for more complex machine learning algorithms**

Disadvantage:

- **Oversimplify or fail in non-linear problems (only do well in linear modeling)**
- **Sensitive to outliers and noises**
- **Before using Linear Regression, We have to ensure the linear relationship between the dependent and the independent variables. If not, the model will perform poorly. This can be done using the feature transformation.**

Applications

- **Business optimization**
    a. **A factory manager might, for example, build a model to understand the relationship between oven temperature and the shelf life of the cookies baked in those ovens.**
    b. **A company operating a call center may wish to know the relationship between wait times of callers and number of complaints.**
- **Predictive Analytics:**
    a. **Predicts the number of items which a consumer will probably purchase**
    b. **Predicts how many units consumers will purchase**

References

- https://seaborn.pydata.org/tutorial/regression.html
- https://smallbusiness.chron.com/application-regression-analysis-business-77200.html
- https://www.newgenapps.com/blog/business-applications-uses-regression-analysis-advantages/
- https://datascience.stackexchange.com/questions/44192/what-is-the-difference-between-regplot-and-lmplot-in-seaborn