Conditioning on other variables

- The plots above show many ways to explore the relationship between a pair of variables.
- Often, however, a more interesting question is how does the relationship between these two variables change as a function of a third variable?
- This is where the difference between `regplot()` and `lmplot()` appears.
- While `regplot()` always shows a single relationsihp, `lmplot()` combines `regplot()` with FacetGrid to provide an easy interface to show a linear regression on faceted plots that allow you to explore interactions with up to three additional categorical variables.

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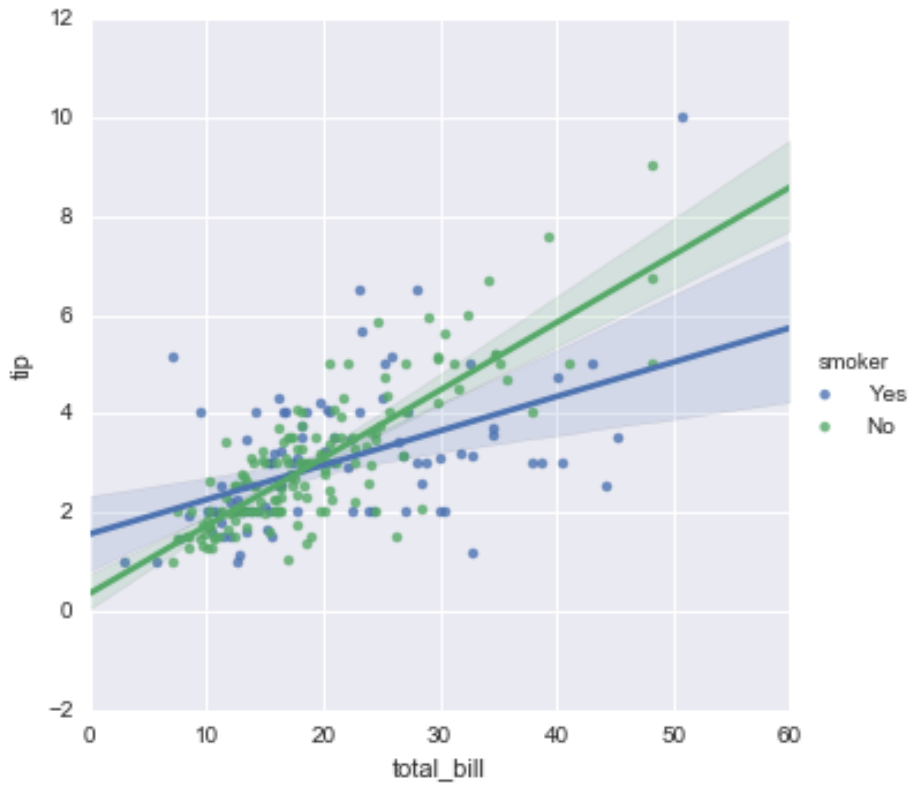
The best way to separate out a relationship is to plot both levels on the same axes and to use color to distinguish them:

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



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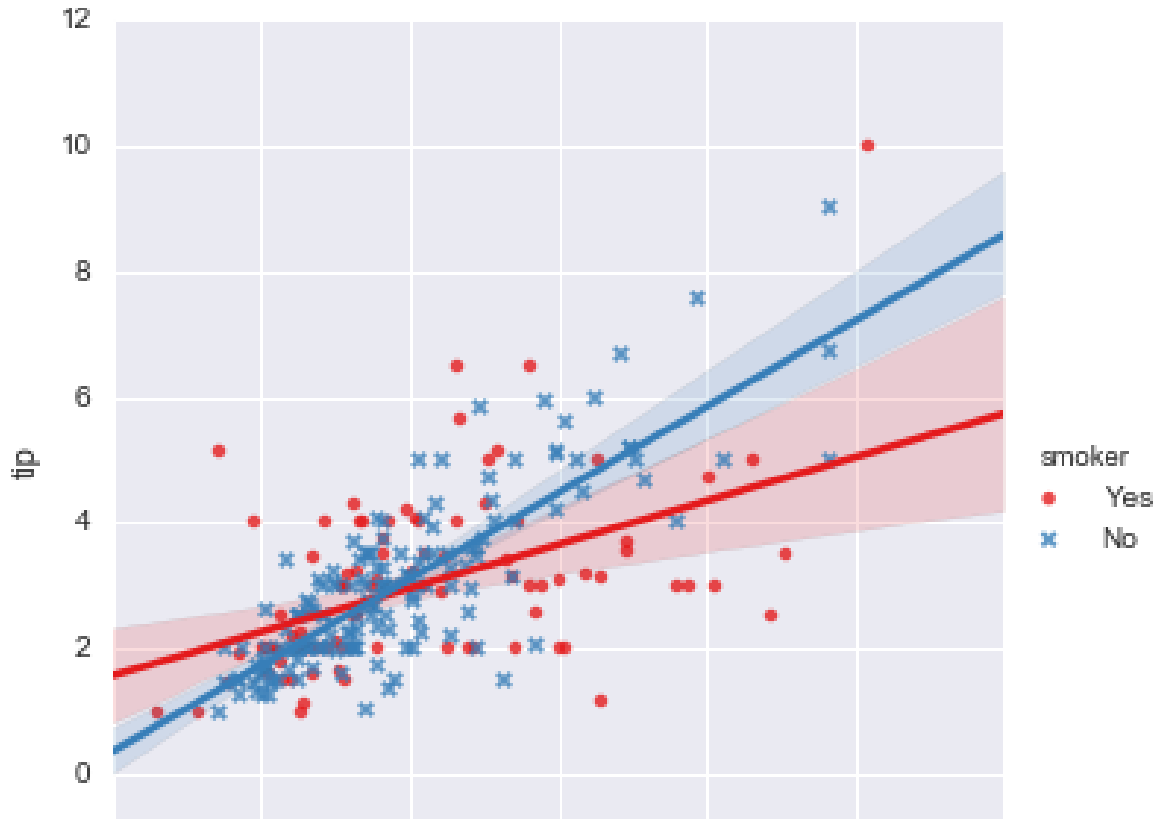
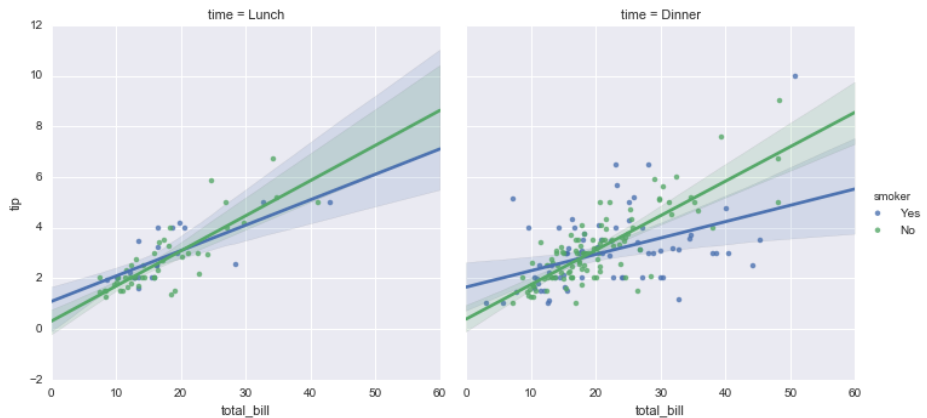
In addition to color, its possible to use different scatterplot markers to make plots the reproduce to black and white better. You also have full control over the colors used:

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



To add another variable, you can draw multiple facets which each level of the variable appearing in the rows or columns of the grid:

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



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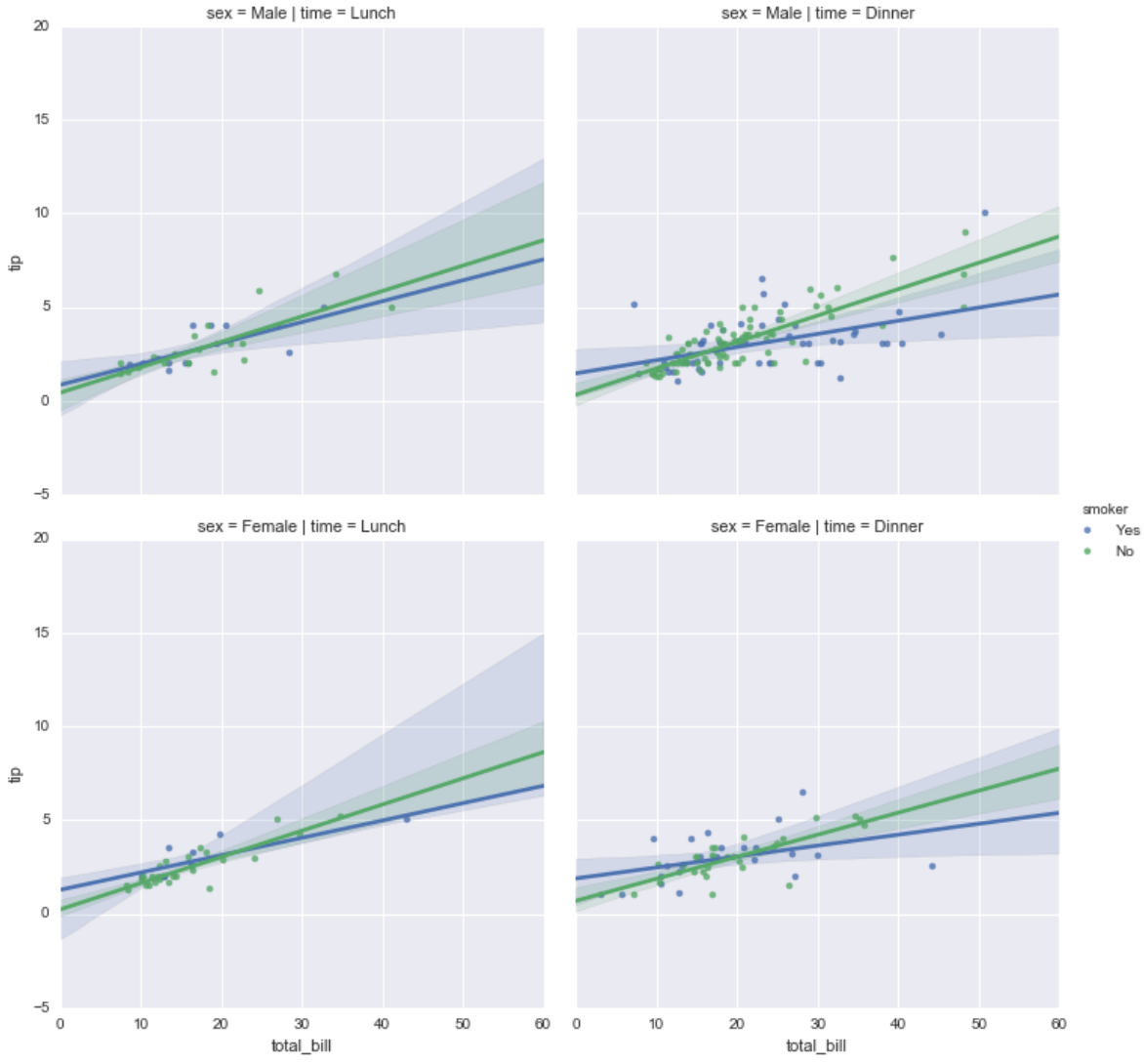
```
sns.lmplot(x="total_bill", y="tip", hue="smoker",
           col="time", row="sex", data=tips);
```



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- Before we noted that the default plots made by `regplot()` and `lmplot()` look the same but on axes that have a different size and shape. This is because func:regplot is an axes-level function draws onto a specific axes.
- This means that you can make mutli-panel figures yourself and control exactly where the the regression plot goes.
- If no axes is provided, it simply uses the *currently active* axes, which is why the default plot has the same size and shape as most other matplotlib functions. To control the size, you need to create a figure object yourself.

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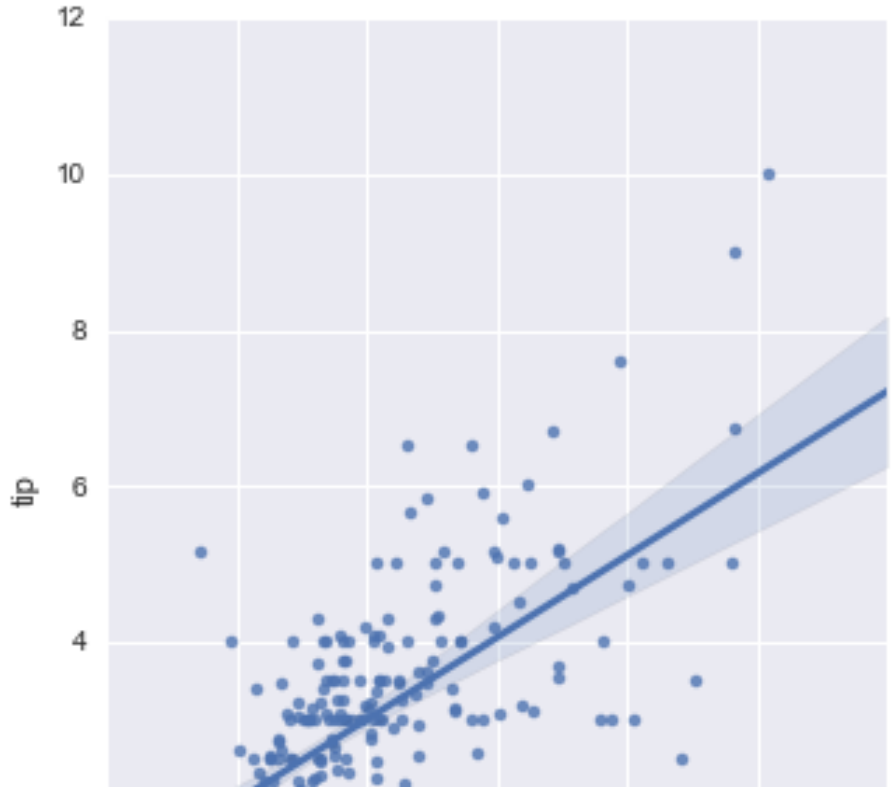
```
f, ax = plt.subplots(figsize=(5, 6))
sns.regplot(x="total_bill", y="tip",
            data=tips, ax=ax);
```



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- In contrast, the size and shape of the `lmplot()` figure is controlled through the `FacetGrid` interface using the size and aspect parameters, which apply to each facet in the plot, not to the overall figure itself:

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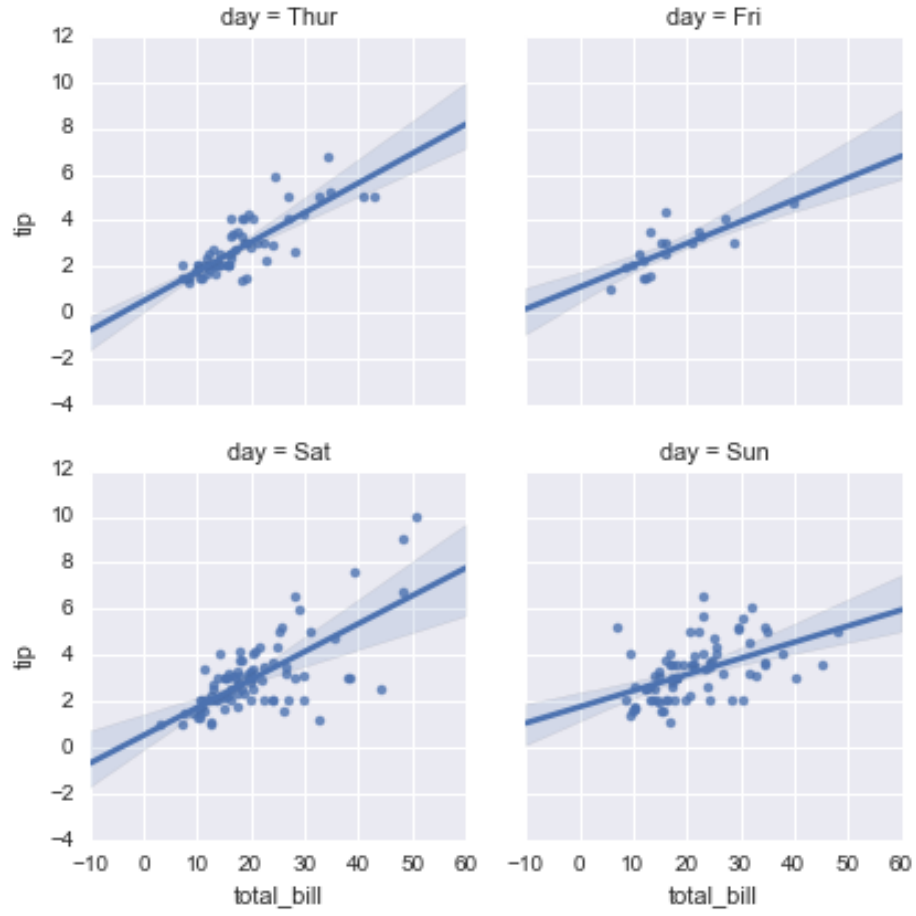
```
sns.lmplot(x="total_bill", y="tip", col="day", data=tip
col_wrap=2, size=3);
```



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```
sns.lmplot(x="total_bill", y="tip", col="day", data=tip
aspect=.5);
```