

SIPPS Coding Workshop: basic track

07: Interactions in linear models

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Linear models: types of effects

- ▶ there are two main classes of effects in linear models: **main effects** and **interactions**

Linear models: types of effects

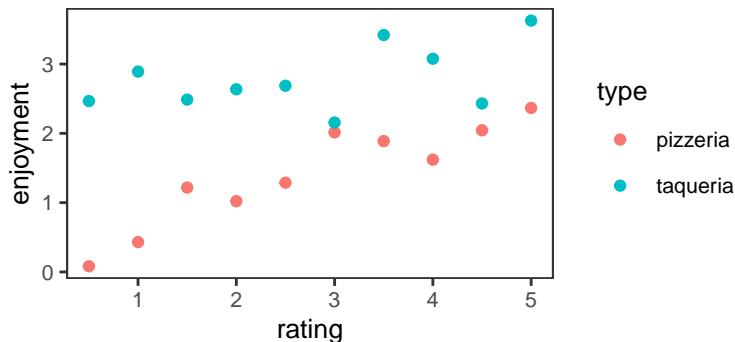
- ▶ there are two main classes of effects in linear models: **main effects** and **interactions**
- ▶ so far, the models we've talked about and run in R have all included main effects only: these simply tell you about the effect of a *single variable* on your outcome variable (potentially while controlling for other additional variables)

Linear models: types of effects

- ▶ there are two main classes of effects in linear models: **main effects** and **interactions**
- ▶ so far, the models we've talked about and run in R have all included main effects only: these simply tell you about the effect of a *single variable* on your outcome variable (potentially while controlling for other additional variables)
- ▶ however, often we're interested in **interactions**: cases where the effect of one variable *depends* on the value of another variable

Linear models: interactions

- ▶ let's return to our previous example: where enjoyment of restaurant take-out is predicted by two variables: Yelp rating and restaurant type
- ▶ visualizing these variables all together provides some evidence that there might be an interaction



Linear models: interactions

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- ▶ it allows us to model the fact that there may be *different slopes of our continuous variable (Yelp rating) for each level of our categorical variable (restaurant type)*
- ▶ unsurprisingly, you can also have **continuous-by-continuous** interactions and **categorical-by-categorical** interactions
- ▶ we'll go through all three of these types of models today