

# STAT107 Data Science Discovery

LAB: EXPERIMENTAL DESIGN

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- Please work in a group of 2–4 students
  - collaboration is important in data science!
  - meet new friends and discuss :)
  - let us know if you have any questions
- Attendance form
  - submit before you leave the lab

## Random fact of the day

The **lipstick effect** states that consumers are more willing to buy less costly luxury goods during an economic crisis. Is it possible to apply randomization if we have a lipstick sales dataset?

- **Main page**
- Hints:
  - Array index in Python begins at 0
  - A dataframe `df`'s index can be retrieved via `df.index`
  - The part of a dataframe `df` not included in another dataframe `sub` can be selected via `df.drop(sub.index)`
  - Two dataframes `sub1` and `sub2` can be combined via `pd.concat([sub1, sub2])`
  - Other functions that you may find useful: `.head(n)`, `.tail(n)`, `.merge(sub1, sub2, how="outer")`
- Submit your work. Feel free to:
  - ask us questions
  - leave whenever you finish the lab

- Common mistakes last semester:
  - 2.1: using `control_random = sample(frac=0.5)` and `treatment_random = sample(frac=0.5)`. This is wrong because the same row may be included in both variables. We have updated the test case this semester to detect this mistake.
  - 3.3: combining `block1` and `block2` before random sampling. This is wrong because you may sample more from `block1` than from `block2`. Correct stratified random sampling should sample from `block1` and `block2` separately