

In-person session 2

January 19, 2023

PMAP 8521: Program evaluation
Andrew Young School of Policy Studies

Plan for today

R FAQs

Regression FAQs

Transforming data with dplyr

Regression with R

R FAQs

RStudio fun

Column types

Numeric, continuous, count, ordinal, interval, qualitative, categorical, a billion other inconsistent names

File paths, working directories, and RStudio projects

The hyperliterality of computers

R Markdown fun

Fun with histograms

Logging

Regression FAQs

Regression equations

**And is the intercept ever useful,
or should we always ignore it?**

**Why use two steps to create a regression in R?
(i.e. assigning it to an object with `<-`?)**

**Why use `tidy()`
from the broom package?**

How was the 0.05 significance threshold determined?

Could we say something is significant if $p > 0.05$, but just note that it is at a higher p-value?

Or does it have to fall under 0.05?

**Why all this convoluted
logic of null worlds?**

Different "dialects" of statistics

Frequentist

$$P(\text{data} \mid H_0)$$

"Regular" statistics;
what you've learned
(and are learning here)

Bayesian

$$P(H \mid \text{data})$$

Requires lots of
computational power

Do we care about the actual coefficients or just whether or not they're significant?

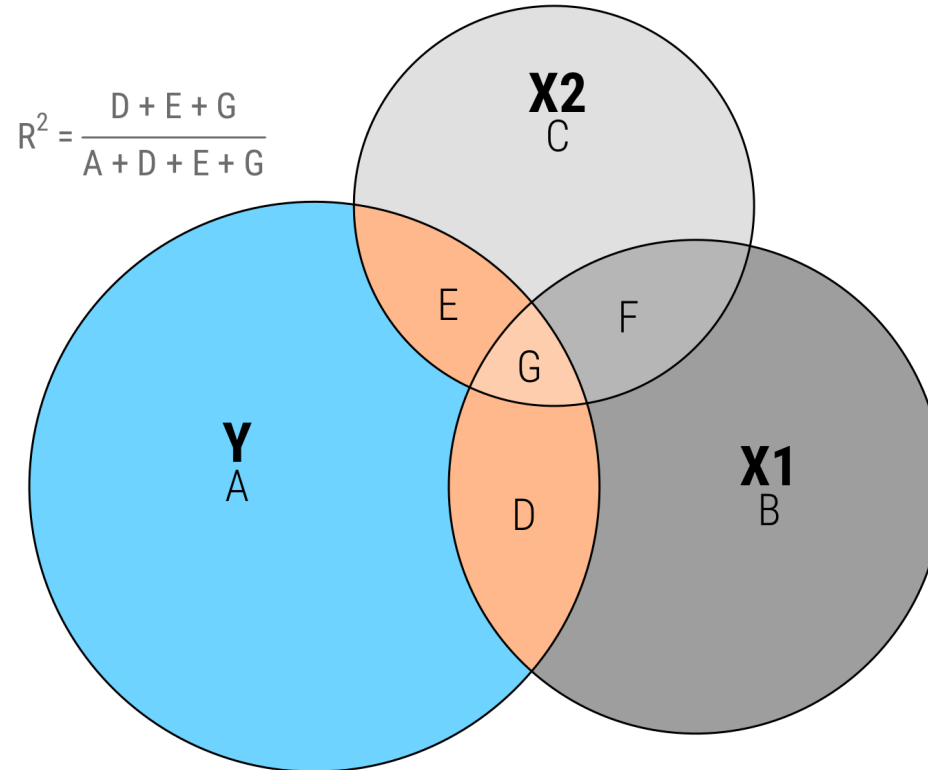
How does significance relate to causation?

If we can't use statistics to assert causation how are we going to use this information in program evaluation?

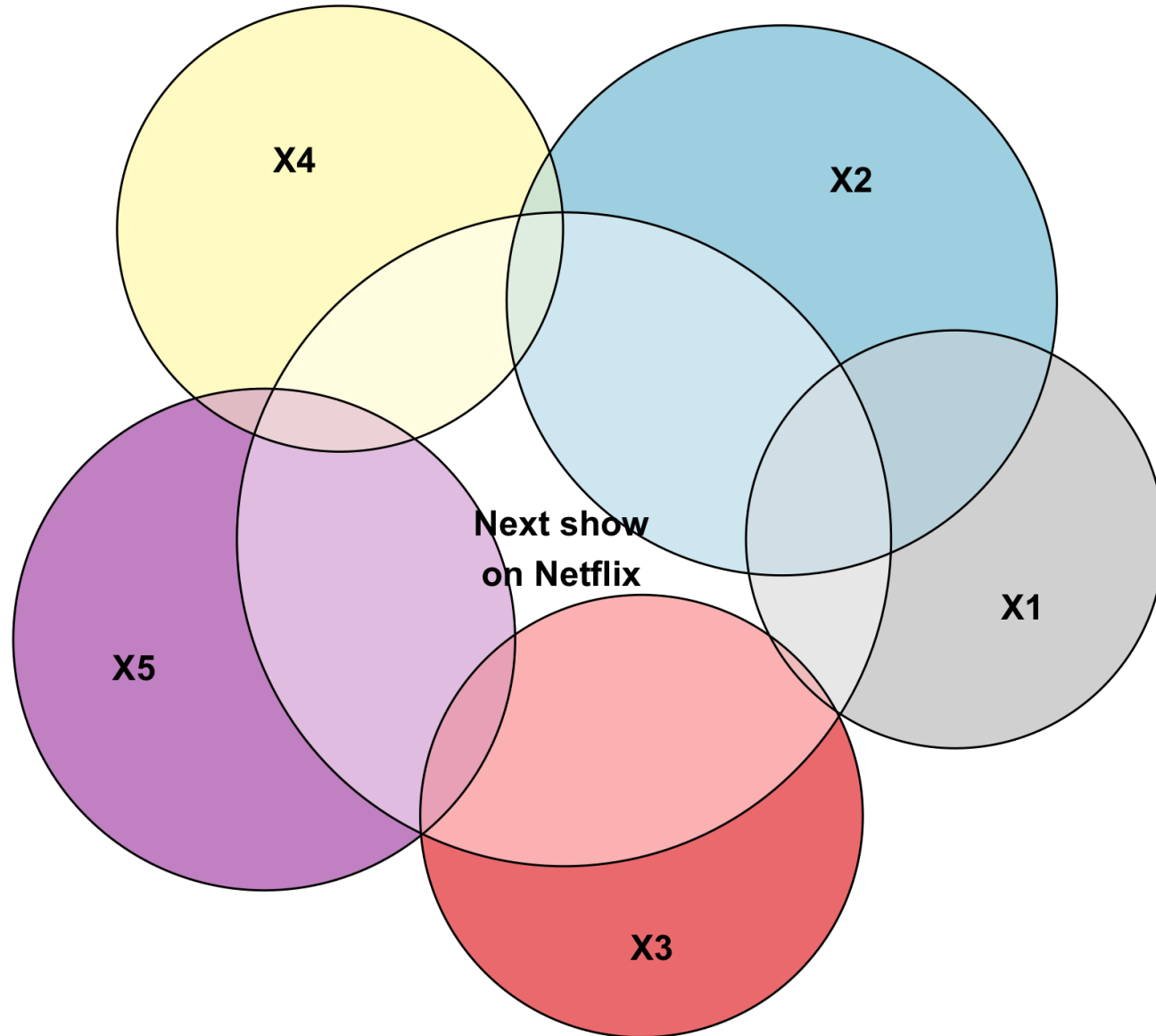
What counts as a "good" R^2 ?

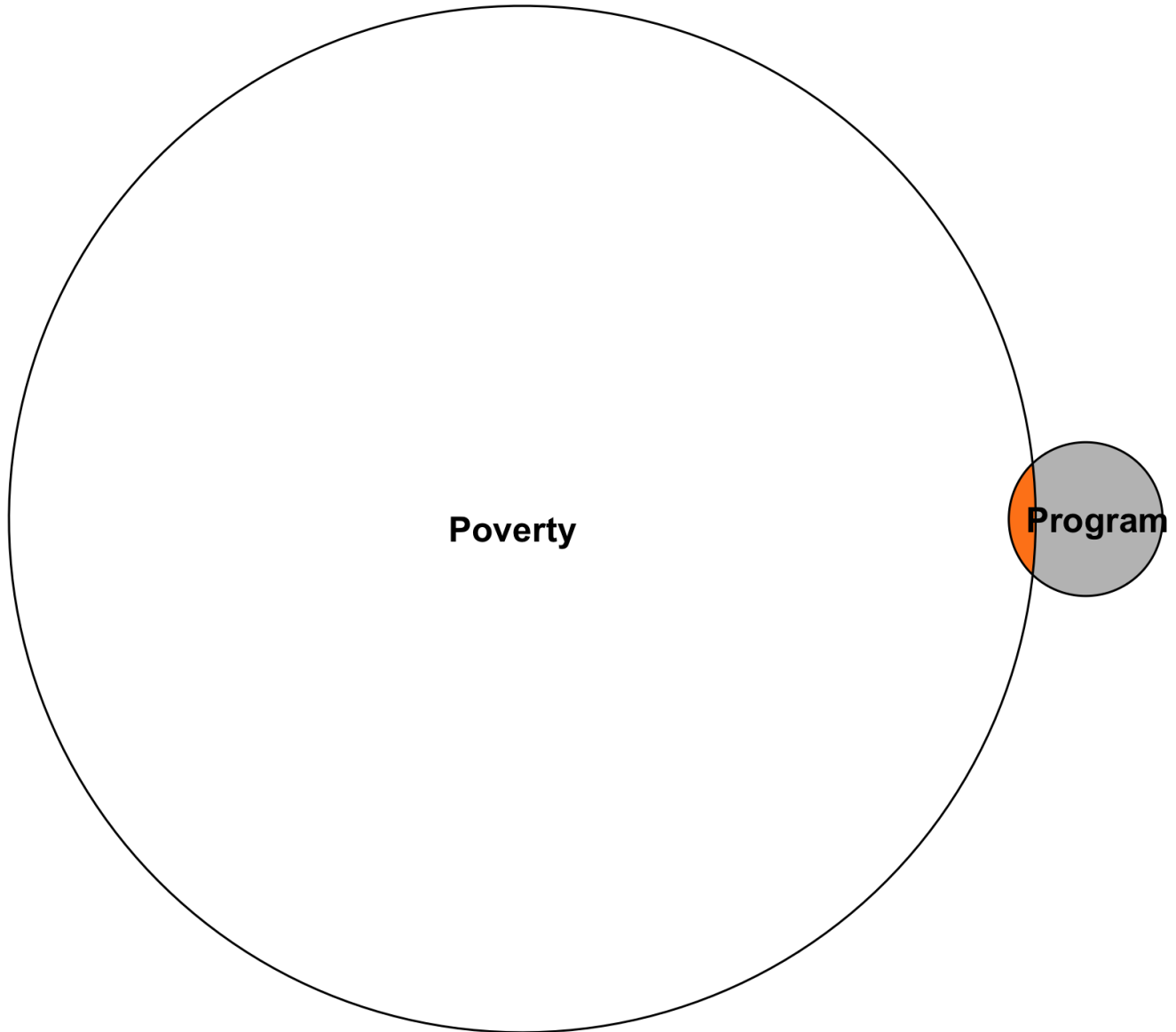
R² represented as an Euler diagram

Orange area (D + E + G) shows the total variance in outcome Y that is jointly explained by X1 and X2



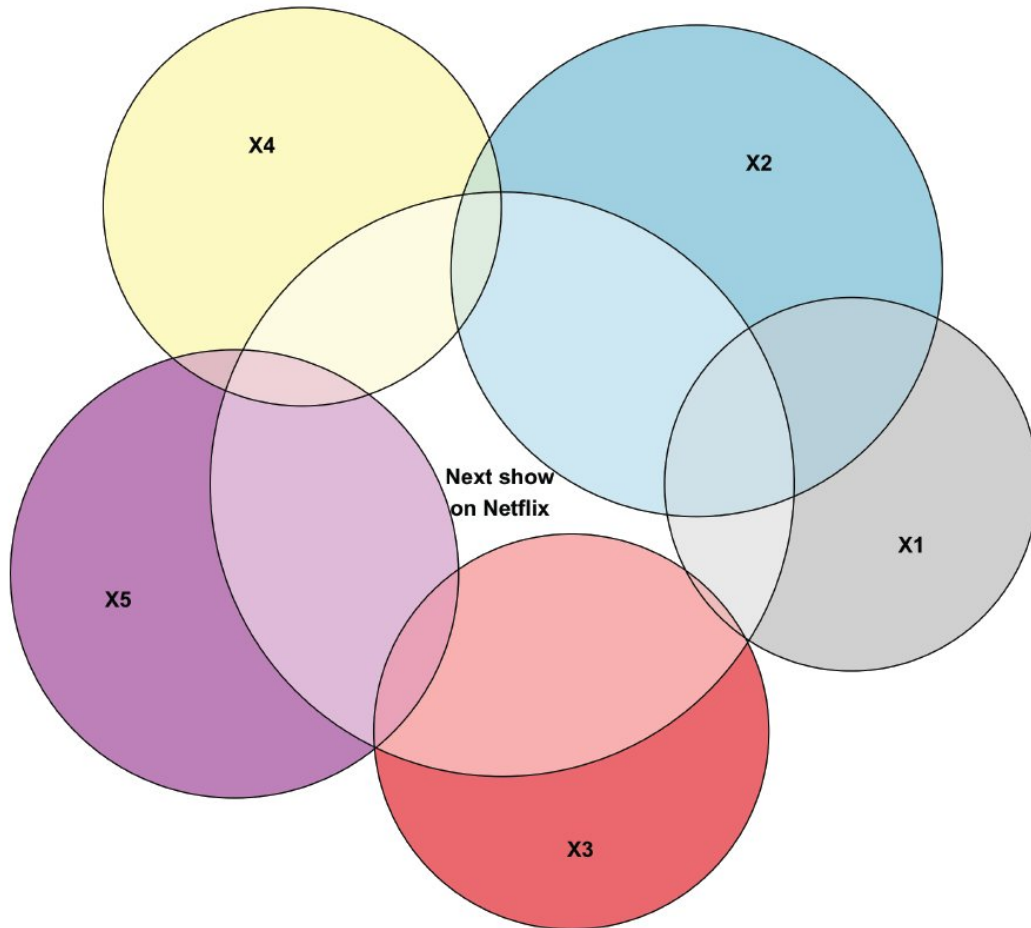
Circles sized according to each variable's sum of squares; size of overlapping areas is not 100% correct due to limitations in available geometric space





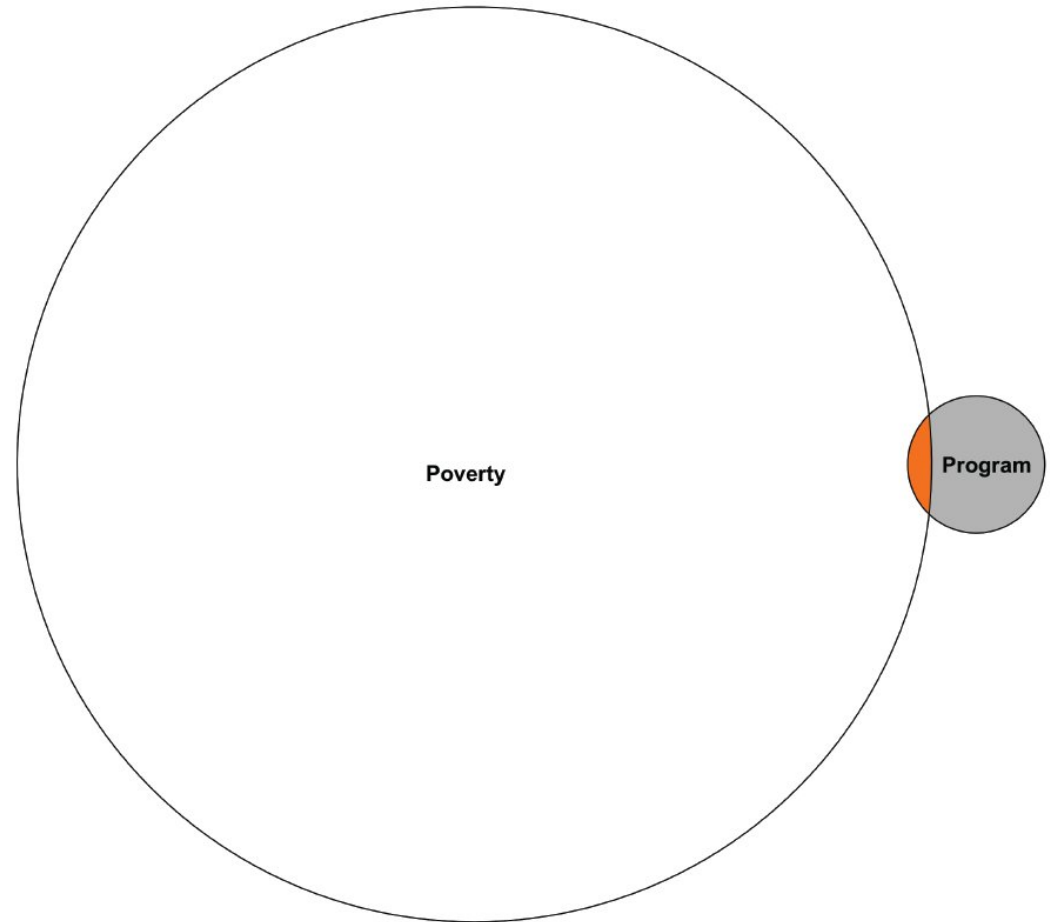
Regression focused on prediction

Focus is on Y
Minimize unexplained variation in the outcome



Regression focused on estimation

Focus is on a single X
Get that little sliver as accurate as possible



Transforming data with dplyr

Regression with R