

Earnings

$(E[Y|Z])$

Ineligible ($z=0$)



Eligible
($z=1$)



Enrollment ($E[D|Z]$)

We can visualize identification of
LATE in the 2D plane.

Earnings

$(E[Y|Z])$

Ineligible ($z=0$)

$E[D|z=0]$

$E[D|z=1]$

Eligible
($z=1$)

Enrollment ($E[D|Z]$)

Length of the blue line is the first stage

Earnings

$(E[Y|Z])$

Ineligible ($z=0$)

$E[Y|Z=0]$

FS

Eligible

($z=1$)

$E[Y|Z=1]$

Enrollment ($E[D|Z]$)

Length of the purple line is the reduced form

Earnings

$(E[Y|Z])$

Ineligible ($z=0$)

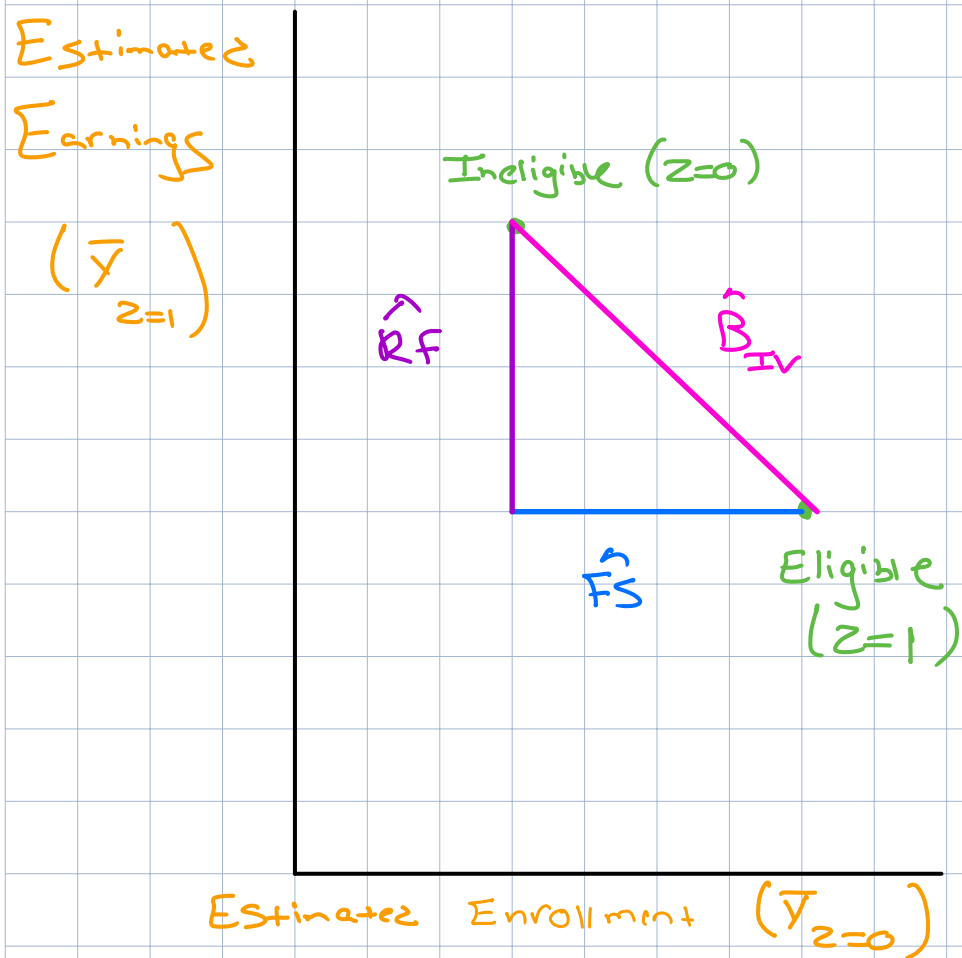
RF

FS

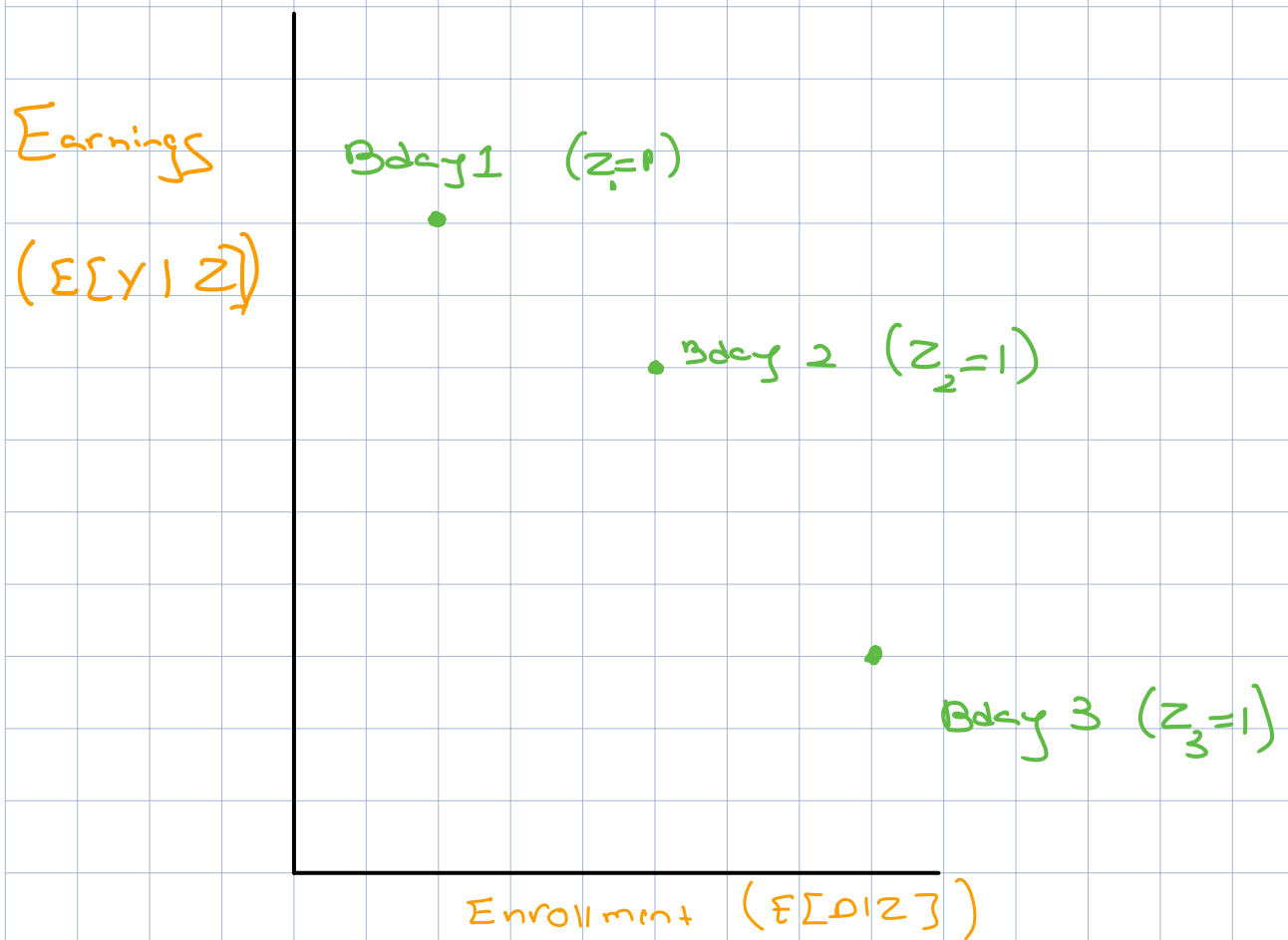
Eligible
($z=1$)

Enrollment ($E[D|Z]$)

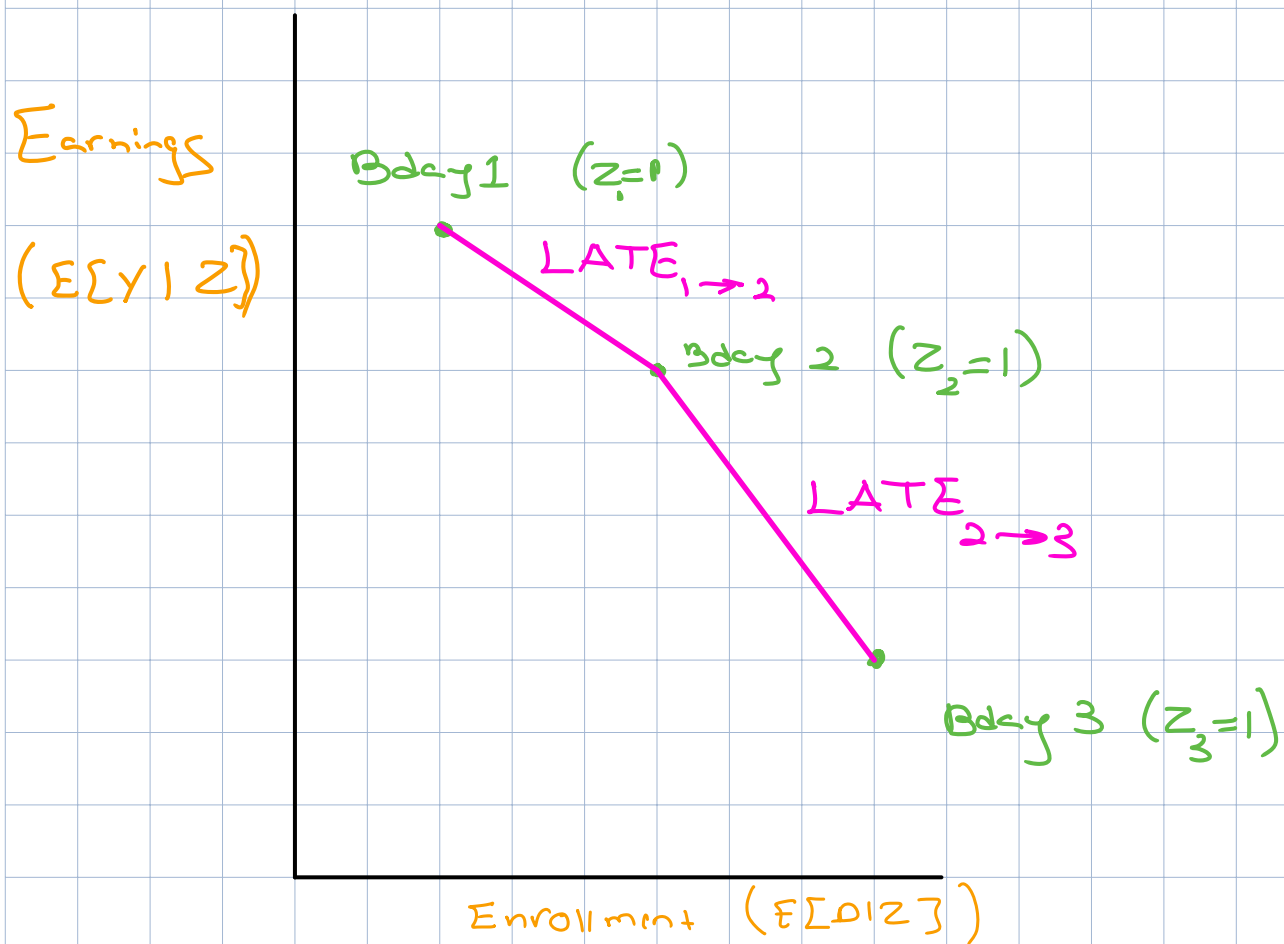
Slope of the pink line is $\frac{RF}{FS} = LATE$



The 2SLS estimator uses sample analogs

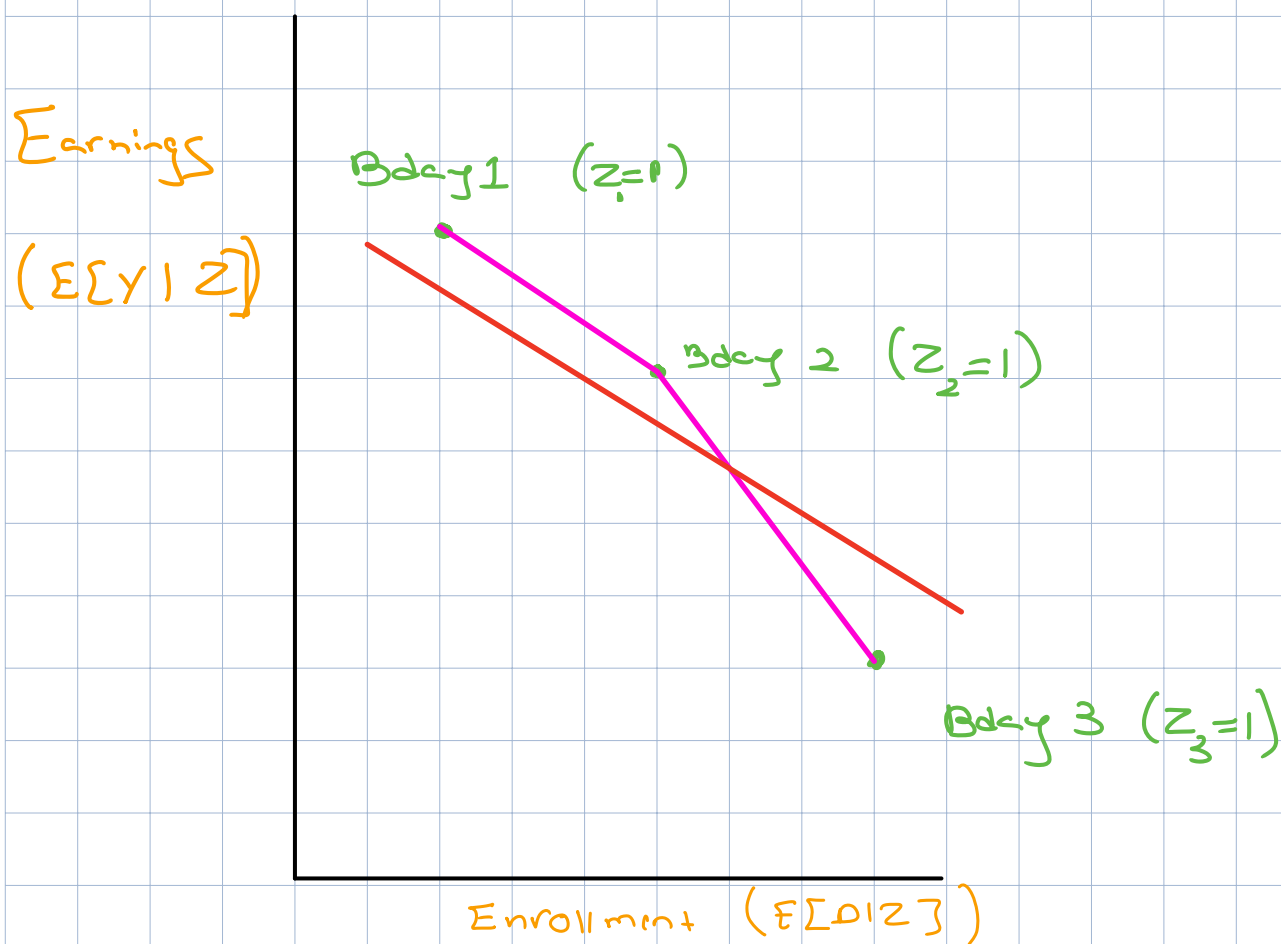


In practice, we have many birthdays
with different earnings & enrollment

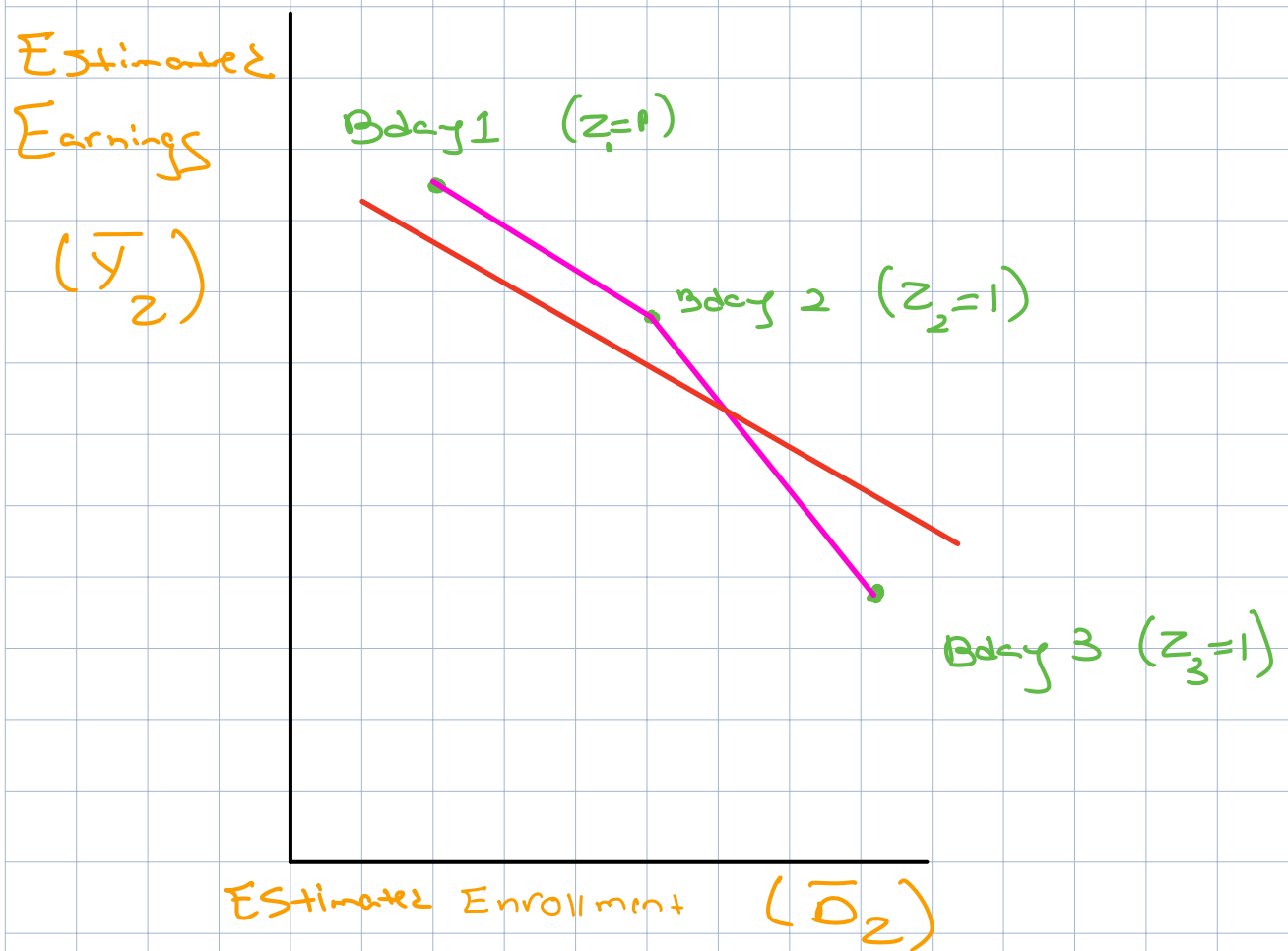


In principle, we can identify the LATE for bday 1 vs. 2 and the LATE for bday 2 vs. 3

But this might be hard to estimate
in practice if we have few observations
per birthday



An easier thing to estimate is the
best linear approximation to the
green dots \rightarrow weighted avg of
 $LATE_{1 \rightarrow 2}$ and $LATE_{2 \rightarrow 3}$



We can approximate the red line
using OLS with sample analogs