GEQ1000

Economics

(Social Science)

1.4
Regression Discontinuity

Quasi-experiments

Quasi-experiments

"Nature" sometimes creates two similar groups in a manner akin to a randomized trial

Exploiting Cutoffs

Many programs use *cutoffs* to decide if subjects will be treated or not.

Example: remedial classes during school holidays

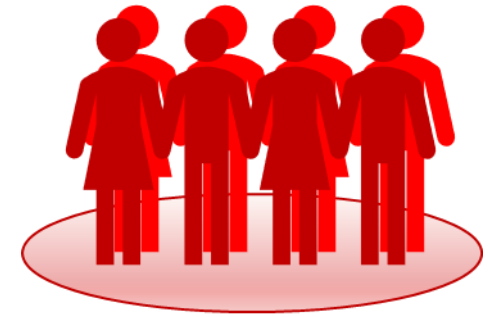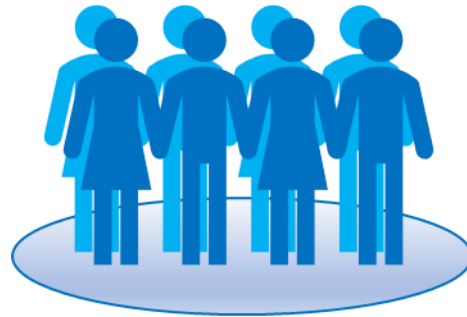Only students who did poorly in tests are assigned to do remedial class

Flawed study

Treatment group
Remedial Class

Control group
No Remedial Class

Assign by
test scores

Problem: The two groups are different in relevant characteristics
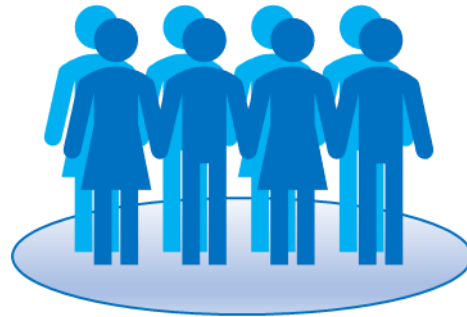
Another flawed study

Treatment group
After Remedial Class

Control group
Before Remedial Class

Assign by observation time

Problem: Other things are changing in the meantime

Regression Discontinuity Design

Suppose the *cutoff* mark is 60.

Compare only students who are *slightly below 60* and those *slightly at or above 60*

Identification assumption: on average they are similar except for treatment status

Regression Discontinuity Design
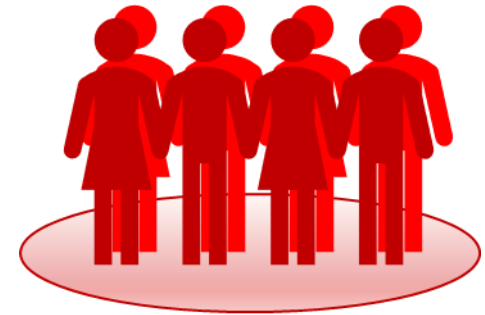
Assign by test scores

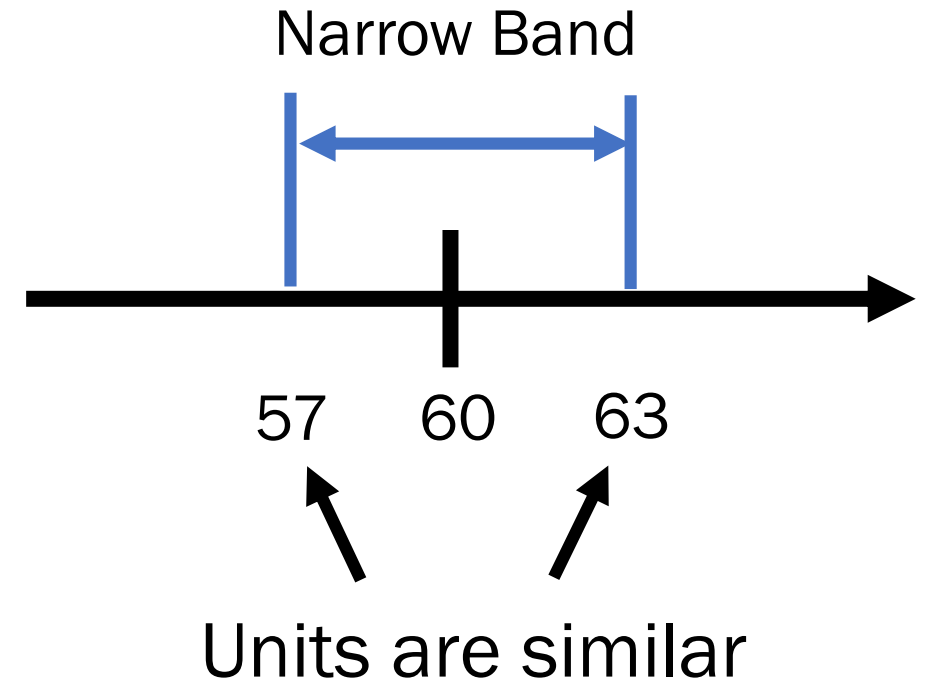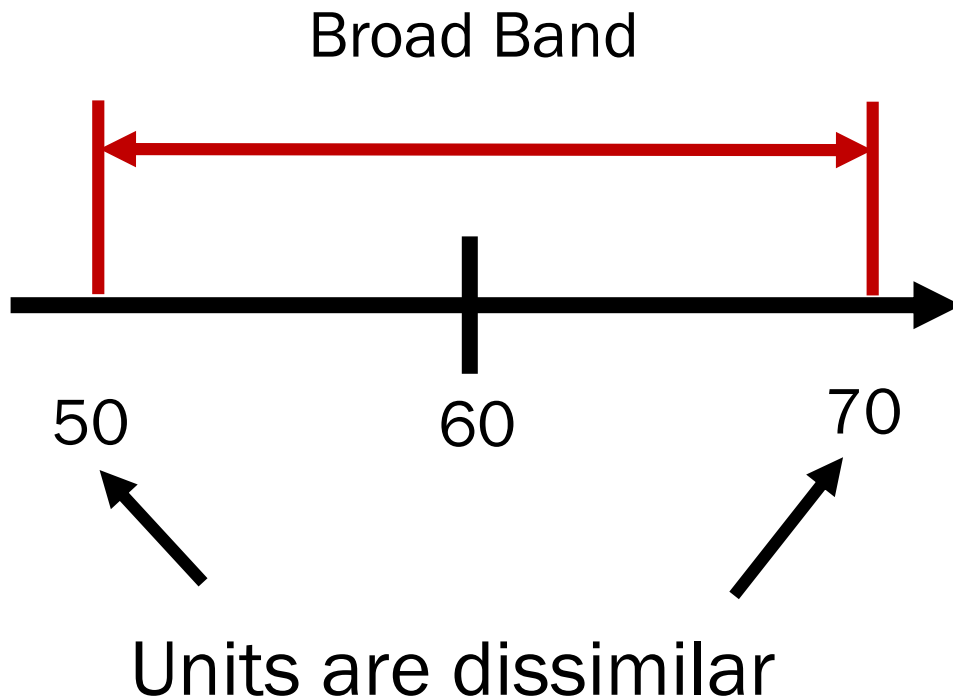*Treatment group*
Scored just below 60
Remedial Class

Control group
Scored just at/above 60
No Remedial Class

How many points above and below cutoff?

Remedial classes in Chicago schools

Remedial Education and Student Achievement: A Regression-Discontinuity Analysis

Author & abstract | Download & other version | 10 References | 144 Citations | Related works & more

Corrections

Author

Listed:

- Brian A. Jacob
  (John F. Kennedy School of Government, Harvard University)
- Lars Lefgren
  (Brigham Young University)

Registered:

- Lars Lefgren

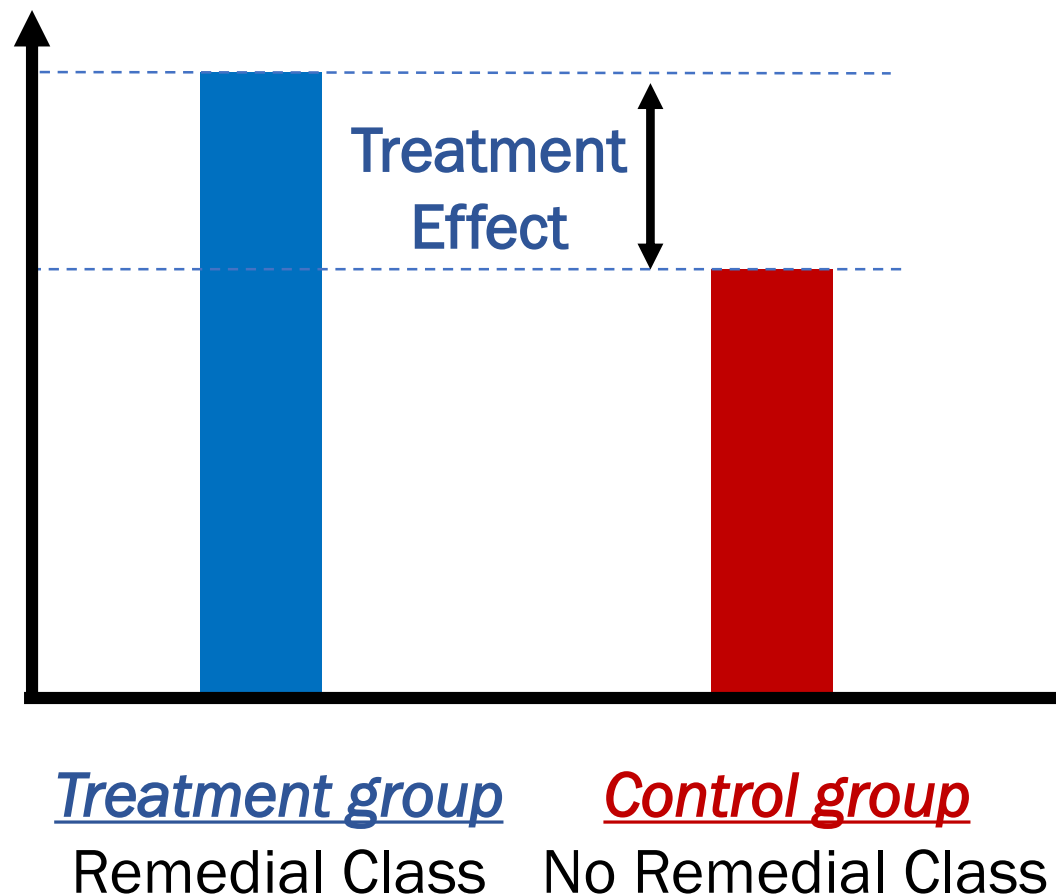https://ideas.repec.org/a/tpr/restat/v86y2004i1p226-244.html

Remedial classes in Chicago schools

Third graders improved their scores two years later by 12%

Sixth graders improved their scores two years later by 6%.

Later test scores

Treatment Effect

Treatment group
Remedial Class

Control group
No Remedial Class

Elements of Regression Discontinuity

An *assignment variable* ranks the subjects.

A *cutoff* decides treatment eligibility

People *on one side of the cutoff are treated* and people *on the other side are not*.

Elements of Regression Discontinuity

Example: Remedial classes during school holidays

| Assignment variable	Initial Test Score
Cutoff	Cutoff mark = 60
Treatment actually follows treatment assignment	Those who miss cutoff actually go to remedial school Those who make cutoff actually do not go

Weakness: fewer observations to work with
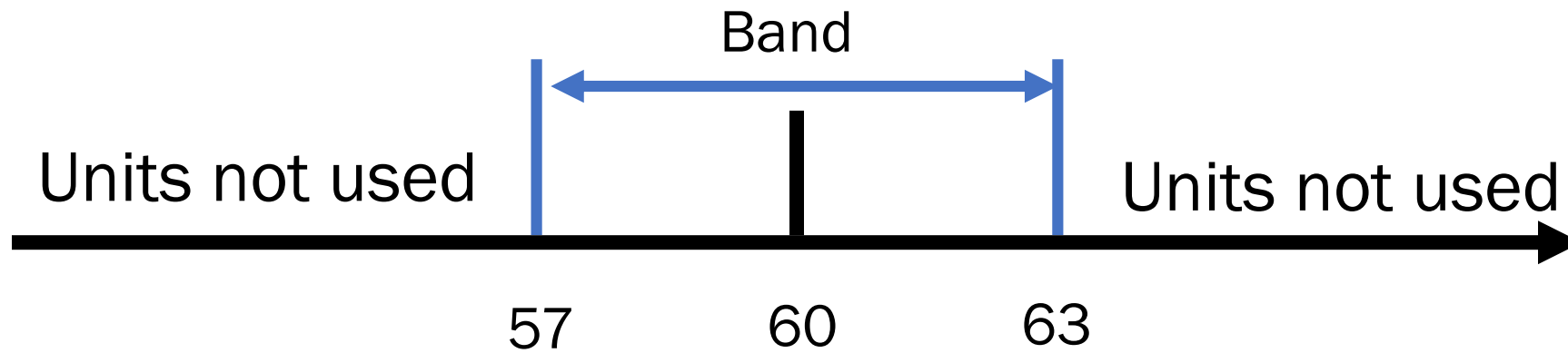
Weakness: fewer observations to work with

Increase the Band

60
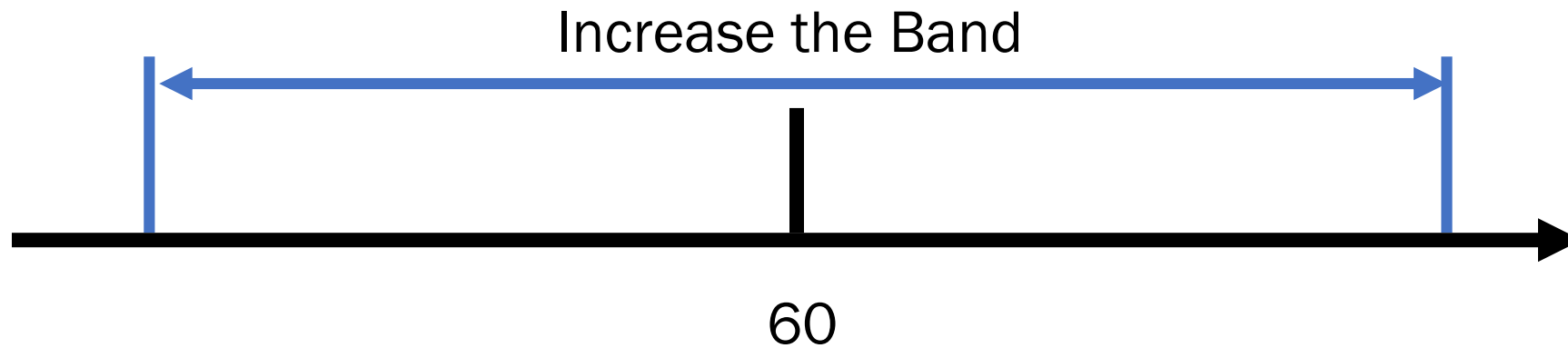
Increasing the band adds more observations
but makes the identification assumption less believable

Weakness: external validity
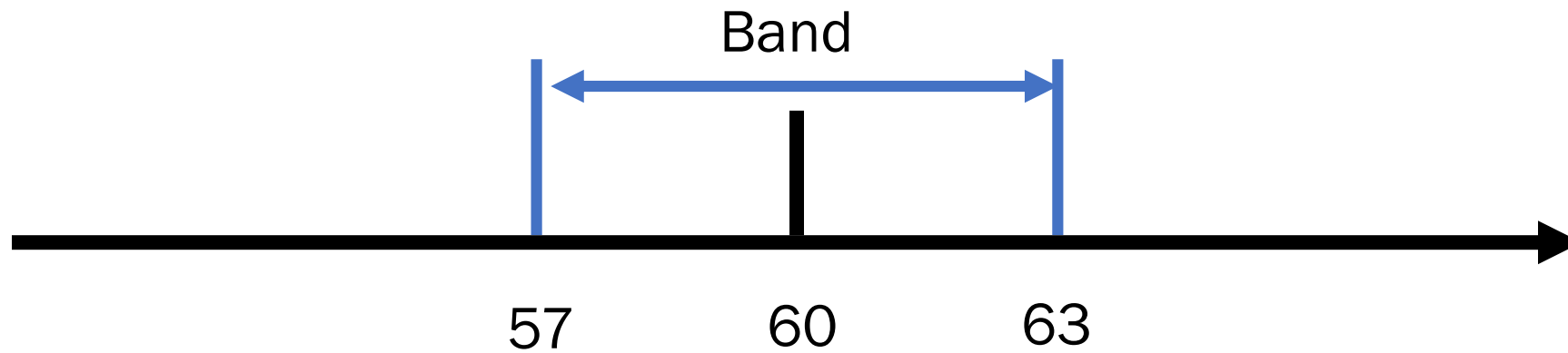
Results may not apply to students far from 60

Next up:
Difference in differences