

diff - diff

v2.3

**The Python DiD library
just got a lot more powerful.**

The efficient estimator for staggered DiD

Rust-powered acceleration

Windows support

diff-diff

What is diff-diff?

- + Complete DiD toolkit for Python
- + sklearn-like API, statsmodels-style output
- + Up to 2,000x faster than R
- + Validated to 10+ decimal places vs R

If you missed v1, here's what you need to know.

diff-diff

New Estimator

Imputation DiD

Borusyak, Jaravel & Spiess (2024)

Review of Economic Studies

1

Estimate unit + time FE on untreated observations

2

Impute counterfactual $Y(0)$ for treated units

3

Aggregate to get treatment effects

The semi-parametrically efficient estimator

for staggered adoption.

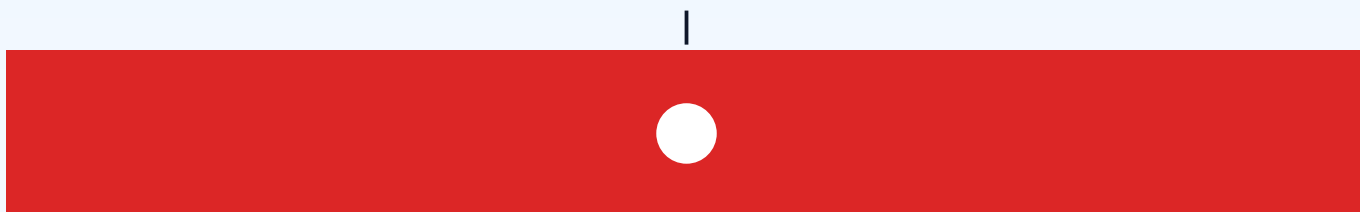
diff-diff

~50%

shorter confidence intervals

than Callaway-Sant'Anna

Callaway-SA



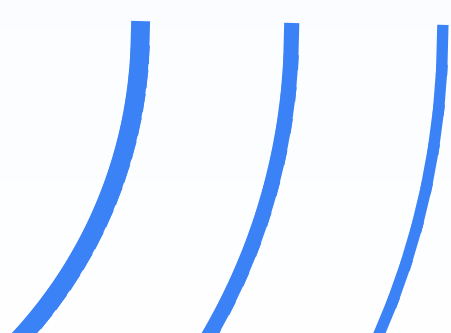
Imputation DiD



Under homogeneous treatment effects.

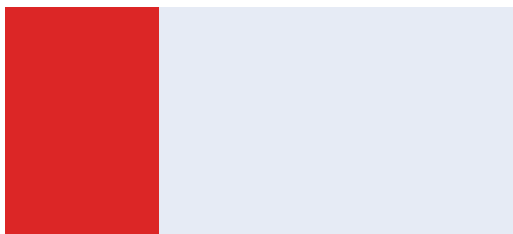
Similar gains vs Sun-Abraham.

diff-diff



Why it's more precise

Callaway-SA



Defaults to
never-treated only

Imputation DiD



Uses never-treated
+ not-yet-treated

More data in the counterfactual model = tighter inference

Built-in pre-trend test, independent of treatment estimation

diff-diff

Drop-in replacement

```
# Switch in one line

from diff_diff import ImputationDiD

est = ImputationDiD()

results = est.fit(

    data,

    outcome='sales',

    unit='firm_id',

    time='year',

    first_treat='first_treat',

    aggregate='event_study'

)
```

Same fit() signature as CallawaySantAnna.

Same results object.

diff-diff

Also in

v2.0-2.3

Rust Backend

v2.0

- + 4-8x additional speedup
- + Parallel bootstrap & OLS
- + Auto-fallback to pure Python

Windows Support

v2.2

- + pip install just works
- + No BLAS/LAPACK setup needed
- + Linux, macOS, Windows

diff-diff

Every Method

You Need

Basic DiD / TWFE

Classic 2x2 and panel

Callaway-Sant'Anna

Staggered adoption (2021)

Sun-Abraham

Interaction-weighted (2021)

Imputation DiD [NEW]

Borusyak et al. (2024)

Synthetic DiD

Arkhangelsky et al. (2021)

Triple Difference

DDD with proper covariates

Honest DiD

Rambachan-Roth sensitivity

Bacon Decomposition

TWFE diagnostic weights

The most complete DiD toolkit in any language.

diff-diff

Validated.

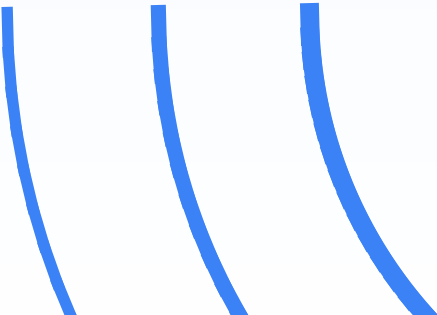
Production-Ready.

Comparison	Result
Point estimates vs R	Identical (10+ decimals)
R packages tested	did, synthdid, fixest, didimputation
Jupyter tutorials	11 notebooks included

Academic-grade accuracy. Validated against 4 R packages.



diff-diff



Upgrade to

v2.3

```
$ pip install --upgrade diff-diff
```

github.com/igerber/diff-diff

Full documentation & 11 tutorials included

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Difference-in-Differences for Python

