

10: Difference-in-differences

Videregående kvantitative metoder i studiet af politisk adfærd

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15. november 2017

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 - Case I: Enos (2016)
 - Case II: Flygtningecentre og EU-afstemninger
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Fagets opbygning

Blok 1

Gang	Tema	Litteratur	Case
1	Introduktion til R	Leeper (2016)	
2	R workshop + tidy data	Wickham (2014), Zhang (2017)	
3	Regression I: OLS brush-up	AP kap 3	Newman et al. (2015), Solt et al. (2017)
4	Regression II: Paneldata	AGS kap 4	Larsen et al. (2017)

Fagets opbygning

Blok 2

5	Introduktion til kausal inferens	Hariri (2012), Samii (2016)	Eckles & Bakshy (2017)
6	Matching	Justesen & Klemmensen (2014)	Nall (2015)
<i>Efterårsferie</i>			
7	Eksperimenter I	AP kap 1+2, GG kap 1+2	Gerber, Green & Larimer (2008)
8	Eksperimenter II	GG kap 3+4+5	Gerber & Green (2000)
9	Instrumentvariable	AP kap 4	Lundborg et al. (2017)
10	Difference-in-differences	AP kap 5	
11	Regressionsdiskontinuitetsdesigns	AP kap 6	Eggers & Hainmueller (2009)

Fagets opbygning

Blok 3

12	Tekst som data	Grimmer & Stewart (2013), Benoit & Nulty (2016)	Baturo & Mikhaylov (2013)
13	Scraping af data fra online-kilder	MRMN kap 9+14	Hjorth (2016)
14	'Big data' og maskinlæring	Varian (2014), Montgomery & Olivella (2017)	Theocharis et al. (2016)

Temaer i midterms

- generelt højt niveau
- hos nogle usikkerhed om data → bør afklares asap!
- lidt (forståelig) forvirring om DiD ctr. RDD
- lidt tendens til 'novelty bias' → husk værdien af replikationer
- husk at demonstrere overblik over pensum i teksten

Opsamling fra sidst

- opsamling om noncompliance
- logikken i IV
- tre kriterier: independence, relevance, exclusion
- first stage
- reduced form
- case: Lundborg et al.
- efter holdtimen: oplæg v. Grimmer om kausal inferens m. tekst

Motiverende eksempel: mindstelønninger og beskæftigelse



Kilde: <http://s.nj.com/cYZ4X11>



Kilde: <https://www.thinglink.com/scene/644138348922798080>

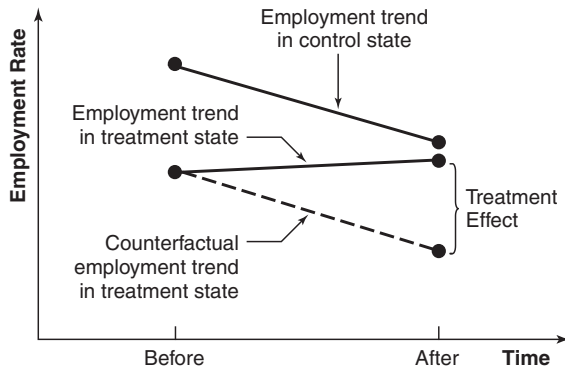
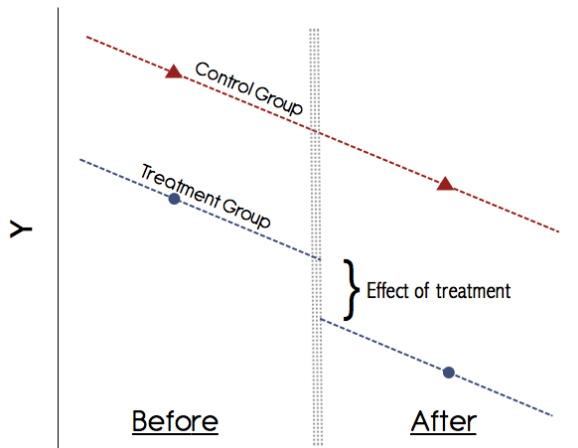


Figure 5.2.1 Causal effects in the DD model.

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→ afgørende kilde til counterfactual: *parallel trends assumption*

Illustration af parallel trends assumption:



Grundidé: Y_0 er alene fkt. af tidsinvariant enhedseffekt og enhedsinvariant tidseffekt

$$E[Y_{0ist}|s, t] = \gamma_s + \lambda_t \quad (1)$$

Observeret Y afhænger hertil af treatment D_{st} :

$$Y_{ist} = \gamma_s + \lambda_t + \rho D_{st} + \epsilon_{ist} \quad (2)$$

Vi kan dermed estimere ρ som forskellen ml. enheder før og efter treatment:

$$(\overline{Y_{t=1,s=1}} - \overline{Y_{t=0,s=1}}) - (\overline{Y_{t=1,s=0}} - \overline{Y_{t=0,s=0}}) = \hat{\rho} \quad (3)$$

hvor t angiver tid før/efter treatment, s treated/ikke treated enhed

TABLE 5.2.1
Average employment in fast food restaurants before and after the
New Jersey minimum wage increase

Variable	PA (i)	NJ (ii)	Difference, NJ – PA (iii)
1. FTE employment before, all available observations	23.33 (1.35)	20.44 (.51)	–2.89 (1.44)
2. FTE employment after, all available observations	21.17 (.94)	21.03 (.52)	–.14 (1.07)
3. Change in mean FTE employment	–2.16 (1.25)	.59 (.54)	2.76 (1.36)

Notes: Adapted from Card and Krueger (1994), table 3. The table reports average full-time-equivalent (FTE) employment at restaurants in Pennsylvania and New Jersey before and after a minimum wage increase in New Jersey. The sample consists of all restaurants with data on employment. Employment at six closed restaurants is set to zero. Employment at four temporarily closed restaurants is treated as missing. Standard errors are reported in parentheses.

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Er parallel trends assumption opfyldt?

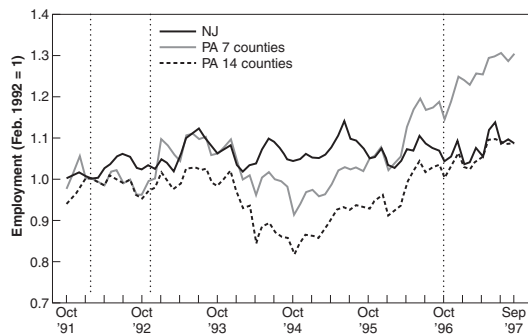


Figure 5.2.2 Employment in New Jersey and Pennsylvania fast food restaurants, October 1991 to September 1997 (from Card and Krueger 2000). Vertical lines indicate dates of the original Card and Krueger (1994) survey and the October 1996 federal minimum wage increase.

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Klarere eksempel: Pischke (2007) om effekter af kortere skoleår

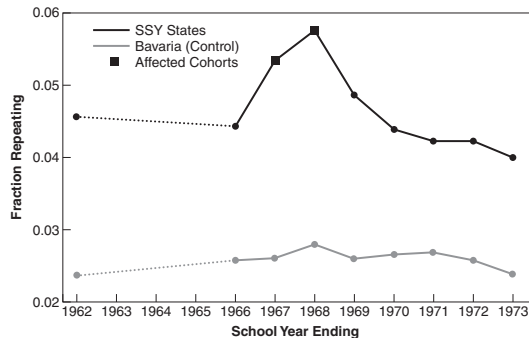


Figure 5.2.3 Average grade repetition rates in second grade for treatment and control schools in Germany (from Pischke, 2007). The data span a period before and after a change in term length for students outside Bavaria (SSY states).

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DiD i regressionsform med treatede og non-treated data 'stakket':

$$Y_{st} = \alpha + \beta TREAT_s + \gamma POST_t + \rho(TREAT_s \times POST_t) + \epsilon_{st} \quad (4)$$

En treatment-indikator i paneldata med tids- og enheds-FE har også en DiD-fortolkning:

$$Y_{st} = \alpha + \rho TREAT + \sum_i^N \beta_i UNIT + \sum_j^T \gamma_j TIME + \epsilon_{ij} \quad (5)$$

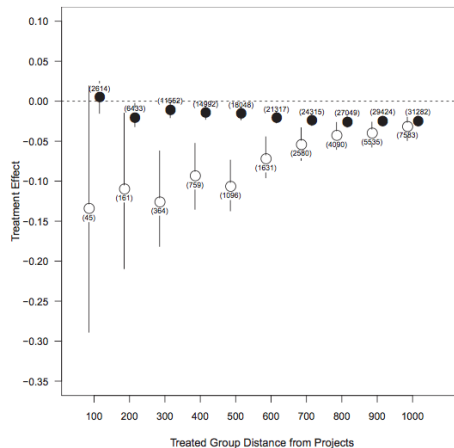
→ modellen kan inkludere tidsvarierende potentielle kilder til OVB

Case I: Enos (2016)



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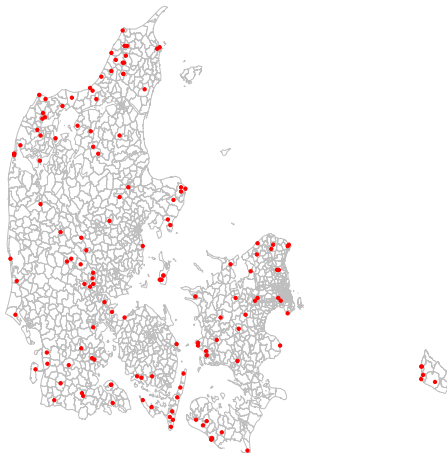
FIGURE 1 Treatment Effects



Case II: Flygtningecentre og EU-afstemninger



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Case II: Flygtningecentre og EU-afstemninger

- t1: afstemning om patentdomstolen, juni 2014
- treatment: nærhed til flygtningecentre åbnet ifm. flygtningekrisen
- t2: afstemning om ophævelse af retsforbeholdet, december 2015

Næste gang: RDD

- AP kap. 6
- læs 6.2 om 'fuzzy RD' kursorisk
- case: Eggers & Hainmueller

Tak for i dag!