

```

name: <unnamed>
log: d:\Temp\MCP\DiD\did-toolbox\Examples\medicaid.smcl
log type: smcl
opened on: 18 Jan 2026, 14:15:49

1 . * just 2013 vs 2014
2 . import excel "D:\Projekte\basic_econometrics\Diff_in_Diff\DiDToolbox\Medicaid_own.xlsx", sheet("Sheet1") firstrow
   (32 vars, 28,644 obs)

3 .
4 . tsset county_code year_code

Panel variable: county_code (strongly balanced)
Time variable: year_code, 2009 to 2019
Delta: 1 unit

5 . keep if yaca==.(yaca==2014|yaca>2019)
   (4,444 observations deleted)

6 .
7 . xtreg crude_rate_20_64 treatPost i.year if year_code>=2013 & year_code<=2014 , fe vce(cluster county_code)

Fixed-effects (within) regression               Number of obs   =    4,400
Group variable: county_code                    Number of groups =    2,200

R-squared:                                     Obs per group:
   Within = 0.0108                             min =          2
   Between = 0.0350                            avg =         2.0
   Overall = 0.0008                             max =          2

                                F(2, 2199)      =    12.09
corr(u_i, Xb) = -0.0012                    Prob > F       =    0.0000

                                (Std. err. adjusted for 2,200 clusters in county_code)

+-----+-----+-----+-----+-----+-----+
| crude_rat-64 | Coefficient | Robust | t | P>|t| | [95% conf. interval] |
|-----+-----+-----+-----+-----+-----+
| treatPost    | .1216303   | 3.748009 | 0.03 | 0.974 | -7.228378  7.471639 |
| year         | 9.148031   | 2.598863 | 3.52 | 0.000 | 4.051548  14.24452 |
| 2014         |            |          |      |       |            |
| _cons        | 449.6517   | .9387732 | 478.98 | 0.000 | 447.8108  451.4927 |
+-----+-----+-----+-----+-----+
| sigma_u      | 145.45523  |          |      |       |            |
| sigma_e      | 62.271173  |          |      |       |            |
| rho          | .84510841   |          |      |       |            |
|              | (fraction of variance due to u_i) |
+-----+-----+-----+-----+-----+

8 .
9 . * all years
10 . import excel "D:\Projekte\basic_econometrics\Diff_in_Diff\DiDToolbox\Medicaid_own.xlsx", sheet("Sheet1") firstrow clear
    (32 vars, 28,644 obs)

11 . tsset county_code year_code

Panel variable: county_code (strongly balanced)
Time variable: year_code, 2009 to 2019
Delta: 1 unit

12 .
13 .
14 . xtdidregress (crude_rate_20_64) (treatPost), group(county_code) time(year_code)

Treatment and time information

Time variable: year_code
Control:      treatPost = 0
Treatment:    treatPost = 1

+-----+-----+-----+
|      | Control | Treatment |
+-----+-----+-----+
| Group |         |           |
| county_code | 1222   | 1382   |
+-----+-----+-----+
| Time |         |           |
| Minimum | 2009   | 2014   |
| Maximum | 2009   | 2019   |
+-----+-----+-----+

Difference-in-differences regression               Number of obs = 28,644
Data type: Longitudinal

                                (Std. err. adjusted for 2,604 clusters in county_code)

+-----+-----+-----+-----+-----+-----+
| crude_rat-64 | Coefficient | Robust | t | P>|t| | [95% conf. interval] |
|-----+-----+-----+-----+-----+-----+
| ATET         |            |          |      |       |            |
| treatPost    | -1.011909   | 1.723404 | -0.59 | 0.557 | -4.39129  2.367473 |
| (1 vs 0)     |            |          |      |       |            |
+-----+-----+-----+-----+-----+

Note: ATET estimate adjusted for panel effects and time effects.
Note: Treatment occurs at different times.

```

15 . estat bdecomp

DID treatment-effect decomposition

ATET = **-1.011909** Number of obs = **28,644**
 Number of groups = **2,604**
 Number of cohorts = **5**

ATET decomposition summary	ATET component	Weight
Treated vs never treated	.6843215	0.845990
Treated earlier vs later	-12.038776	0.109981
Treated later vs earlier	-6.0596275	0.044029

Full ATET decomposition	2x2 coefficient	Weight
Treated vs never treated		
2014 vs never treated	.9977025	0.645146
2015 vs never treated	1.3537912	0.112802
2016 vs never treated	-10.960388	0.057258
2019 vs never treated	13.322783	0.030784
Treated earlier vs later		
2014 vs 2015	-1.239248	0.015046
2014 vs 2016	-5.2519698	0.016366
2014 vs 2019	-14.656263	0.061593
2015 vs 2016	-6.3446361	0.001717
2015 vs 2019	-15.556798	0.010339
2016 vs 2019	-29.468659	0.004920
Treated later vs earlier		
2015 vs 2014	-2.6411471	0.015046
2016 vs 2014	-19.112871	0.013093
2019 vs 2014	2.9920635	0.012319
2016 vs 2015	-19.578119	0.001145
2019 vs 2015	5.515887	0.001723
2019 vs 2016	-1.0893875	0.000703

Note: Number of cohorts includes never treated.

Note: The ATET reported by **xtddidregress** is a weighted average of the ATET components. If any component is substantially different from the ATET reported by **xtddidregress** and the weight is large, consider accounting for treatment-effect heterogeneity by using **xthdidregress**.

16 .

17 . ** Wooldridge

18 . xthdidregress twfe (crude_rate_20_64) (treatPost), group(county_code)

note: variable **_did_cohort**, containing cohort indicators formed by treatment variable **treatPost** and group variable **county_code**, was added to the dataset.

Treatment and time information

Time variable: **year_code**
 Time interval: **2009** to **2019**
 Control: **_did_cohort = 0**
 Treatment: **_did_cohort > 0**

	_did_cohort
Number of cohorts	5
Number of obs	
Never treated	13442
2014	10758
2015	1881
2016	1023
2019	1540

Heterogeneous-treatment-effects regression Number of obs = **28,644**
 Number of panels = **2,604**

Estimator: Two-way fixed effects
 Panel variable: **county_code**
 Treatment level: **county_code**
 Control group: Never treated
 Heterogeneity: Cohort and time

(Std. err. adjusted for **2,604** clusters in **county_code**)

Cohort	ATET	Robust std. err.	t	P> t	[95% conf. interval]	
2014						
year_code						
2014	-4.786314	2.733836	-1.75	0.080	-10.14703	.5743998
2015	-3.787322	3.04012	-1.25	0.213	-9.74862	2.173976
2016	4.659988	3.142988	1.48	0.138	-1.503021	10.823
2017	.3071711	3.38638	0.09	0.928	-6.3331	6.947442
2018	-.9385941	3.290743	-0.29	0.775	-7.391332	5.514144
2019	2.548081	3.389093	0.75	0.452	-4.097508	9.193671
2015						
year_code						
2015	-4.99783	4.951455	-1.01	0.313	-14.70702	4.711357
2016	6.868282	4.718382	1.46	0.146	-2.383878	16.12044
2017	3.839901	5.340868	0.72	0.472	-6.632878	14.31268
2018	-5.471354	5.520333	-0.99	0.322	-16.29604	5.353333
2019	-1.503282	5.454547	-0.28	0.783	-12.19897	9.192407
2016						
year_code						
2016	-.1452888	8.213822	-0.02	0.986	-16.25157	15.961
2017	-12.30152	8.515601	-1.44	0.149	-28.99955	4.396519
2018	-27.32965	8.230132	-3.32	0.001	-43.46791	-11.19138
2019	-10.19354	10.44771	-0.98	0.329	-30.68021	10.29313
2019						
year_code						

2019	13.32278	7.265116	1.83	0.067	-.923206	27.56877
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19 . estat aggregation, cohort

ATET over cohort Number of obs = 28,644

(Std. err. adjusted for 2,604 clusters in county_code)

Cohort	ATET	Robust std. err.	t	P> t	[95% conf. interval]	
2014	-.3328317	1.931198	-0.17	0.863	-4.119672	3.454008
2015	-.2528568	3.241521	-0.08	0.938	-6.609077	6.103363
2016	-12.4925	5.83558	-2.14	0.032	-23.93534	-1.049649
2019	13.32278	7.265116	1.83	0.067	-.923206	27.56877

20 . estat aggregation, time

ATET over time Number of obs = 28,644

(Std. err. adjusted for 2,604 clusters in county_code)

Time	ATET	Robust std. err.	t	P> t	[95% conf. interval]	
2014	-4.786314	2.733836	-1.75	0.080	-10.14703	.5743998
2015	-3.967476	2.877608	-1.38	0.168	-9.610109	1.675156
2016	4.604213	2.905074	1.58	0.113	-1.092276	10.3007
2017	-1.505674	3.131485	-0.05	0.962	-6.291021	5.989887
2018	-3.538811	3.087589	-1.15	0.252	-9.59319	2.515567
2019	2.280863	3.113742	0.73	0.464	-3.824798	8.386525

21 .

22 .

23 . ** Callaway/Sant'Anna DR

24 . xthdidregress twfe (crude_rate) (treatPost), group(county_code)

note: variable _did_cohort, containing cohort indicators formed by treatment variable treatPost and group variable county_code, was added to the dataset.

Treatment and time information

Time variable: year_code

Time interval: 2009 to 2019

Control: _did_cohort = 0

Treatment: _did_cohort > 0

	_did_cohort
Number of cohorts	5
Number of obs	
Never treated	13442
2014	10758
2015	1881
2016	1023
2019	1540

Heterogeneous-treatment-effects regression

Number of obs = 28,644

Number of panels = 2,604

Estimator: Two-way fixed effects

Panel variable: county_code

Treatment level: county_code

Control group: Never treated

Heterogeneity: Cohort and time

(Std. err. adjusted for 2,604 clusters in county_code)

Cohort	ATET	Robust std. err.	t	P> t	[95% conf. interval]	
2014						
year_code						
2014	-4.786314	2.733836	-1.75	0.080	-10.14703	.5743998
2015	-3.787322	3.04012	-1.25	0.213	-9.74862	2.173976
2016	4.659988	3.142988	1.48	0.138	-1.503021	10.823
2017	.3071711	3.38638	0.09	0.928	-6.3331	6.947442
2018	-.9385941	3.290743	-0.29	0.775	-7.391332	5.514144
2019	2.548081	3.389093	0.75	0.452	-4.097508	9.193671
2015						
year_code						
2015	-4.99783	4.951455	-1.01	0.313	-14.70702	4.711357
2016	6.868282	4.718382	1.46	0.146	-2.383878	16.12044
2017	3.839901	5.340868	0.72	0.472	-6.632878	14.31268
2018	-5.471354	5.520333	-0.99	0.322	-16.29604	5.353333
2019	-1.503282	5.454547	-0.28	0.783	-12.19897	9.192407
2016						
year_code						
2016	-.1452888	8.213822	-0.02	0.986	-16.25157	15.961
2017	-12.30152	8.515601	-1.44	0.149	-28.99955	4.396519
2018	-27.32965	8.230132	-3.32	0.001	-43.46791	-11.19138
2019	-10.19354	10.44771	-0.98	0.329	-30.68021	10.29313
2019						
year_code						
2019	13.32278	7.265116	1.83	0.067	-.923206	27.56877

25 . estat aggregation, cohort

ATET over cohort

Number of obs = 28,644

(Std. err. adjusted for 2,604 clusters in county_code)

Cohort	ATET	Robust std. err.	t	P> t	[95% conf. interval]	
2014	-.3328317	1.931198	-0.17	0.863	-4.119672	3.454008
2015	-.2528568	3.241521	-0.08	0.938	-6.609077	6.103363
2016	-12.4925	5.83558	-2.14	0.032	-23.93534	-1.049649
2019	13.32278	7.265116	1.83	0.067	-.923206	27.56877

26 . estat aggregation, time

ATET over time

Number of obs = 28,644

(Std. err. adjusted for 2,604 clusters in county_code)

Time	ATET	Robust std. err.	t	P> t	[95% conf. interval]	
2014	-4.786314	2.733836	-1.75	0.080	-10.14703	.5743998
2015	-3.967476	2.877608	-1.38	0.168	-9.610109	1.675156
2016	4.604213	2.905074	1.58	0.113	-1.092276	10.3007
2017	-1.1505674	3.131485	-0.05	0.962	-6.291021	5.989887
2018	-3.538811	3.087589	-1.15	0.252	-9.59319	2.515567
2019	2.280863	3.113742	0.73	0.464	-3.824798	8.386525

27 .

28 . xthdregress aipw (crude_rate) (treatPost perc_female perc_white perc_hispanic unemp_rate_pc poverty_rate median_income_k), group(county_code >)

note: variable `_did_cohort`, containing cohort indicators formed by treatment variable `treatPost` and group variable `county_code`, was added to the dataset.

Computing ATET for each cohort and time:

Cohort 2014 (10):10 done

Cohort 2015 (10):10 done

Cohort 2016 (10):10 done

Cohort 2019 (10):10 done

Treatment and time information

Time variable: `year_code`

Time interval: 2009 to 2019

Control: `_did_cohort = 0`Treatment: `_did_cohort > 0`

	<code>_did_cohort</code>
Number of cohorts	5
Number of obs	
Never treated	13442
2014	10758
2015	1881
2016	1023
2019	1540

Heterogeneous-treatment-effects regression

Number of obs = 28,644

Number of panels = 2,604

Estimator: Augmented IPW

Panel variable: `county_code`Treatment level: `county_code`

Control group: Never treated

(Std. err. adjusted for 2,604 clusters in county_code)

Cohort	ATET	Robust std. err.	z	P> z	[95% conf. interval]	
2014						
year_code						
2010	-5.604832	3.9404	-1.42	0.155	-13.32788	2.11821
2011	1.565364	4.02757	0.39	0.698	-6.328529	9.459258
2012	4.333278	4.041783	1.07	0.284	-3.58847	12.25503
2013	-7.134687	4.832861	-1.48	0.140	-16.60692	2.337545
2014	-.8585637	4.578522	-0.19	0.851	-9.832302	8.115175
2015	6.322813	4.612823	1.37	0.170	-2.718155	15.36378
2016	13.24828	4.413365	3.00	0.003	4.598245	21.89832
2017	13.71379	4.809485	2.85	0.004	4.287371	23.14021
2018	11.20397	5.128611	2.18	0.029	1.15208	21.25586
2019	18.11959	4.906644	3.69	0.000	8.50274	27.73643
2015						
year_code						
2010	8.266803	6.439382	1.28	0.199	-4.354154	20.88776
2011	1.740605	6.766555	0.26	0.797	-11.5216	15.00281
2012	-6.266669	6.442608	-0.97	0.331	-18.89395	6.360611
2013	-1.1612685	8.60929	-0.02	0.985	-17.03517	16.71263
2014	1.748804	7.842482	0.22	0.824	-13.62218	17.11979
2015	5.232453	7.120012	0.07	0.941	-13.43172	14.47821
2016	7.24529	7.158168	1.01	0.311	-6.784461	21.27504
2017	11.72394	7.677091	1.53	0.127	-3.322878	26.77077
2018	5.067276	7.981191	0.06	0.949	-15.13612	16.14957
2019	7.980641	7.337396	1.09	0.277	-6.40039	22.36167
2016						
year_code						
2010	-12.64943	13.80444	-0.92	0.359	-39.70563	14.40677
2011	-7.384062	16.60646	-0.44	0.657	-39.93212	25.164
2012	-7.495301	20.6746	-0.36	0.717	-48.01678	33.02617
2013	1.179399	11.02206	0.11	0.915	-20.42344	22.78223

2014	-3.01771	12.4699	-0.24	0.809	-27.45826	21.42284
2015	-2.327461	12.49634	-0.19	0.852	-26.81983	22.16491
2016	.6638016	12.32086	0.05	0.957	-23.48464	24.81224
2017	-16.99212	12.07182	-1.41	0.159	-40.65244	6.668212
2018	-34.36462	12.05456	-2.85	0.004	-57.99113	-10.73811
2019	-19.19046	14.48101	-1.33	0.185	-47.57272	9.191802
2019						
year_code						
2010	-.7287782	7.932366	-0.09	0.927	-16.27593	14.81837
2011	9.486301	7.534617	1.26	0.208	-5.281277	24.25388
2012	-1.979087	7.365776	-0.27	0.788	-16.41574	12.45757
2013	-6.536168	7.019386	-0.93	0.352	-20.29391	7.221575
2014	8.193503	7.315425	1.12	0.263	-6.144466	22.53147
2015	7.68665	8.340697	0.92	0.357	-8.660816	24.03412
2016	12.11781	9.013375	1.34	0.179	-5.548083	29.7837
2017	-1.915545	9.061966	-0.21	0.833	-19.67667	15.84558
2018	-5.344114	8.427639	-0.63	0.526	-21.86198	11.17375
2019	3.413603	8.620258	0.40	0.692	-13.48179	20.309

Note: ATET computed using covariates.

Note: Base time for pretreatment ATETs is the previous period.

29 . estat aggregation, cohort

ATET over cohort Number of obs = 28,644

(Std. err. adjusted for 2,604 clusters in county_code)

Cohort	ATET	Robust std. err.	z	P> z	[95% conf. interval]	
2014	10.29165	3.631284	2.83	0.005	3.17446	17.40883
2015	5.59597	5.746254	0.97	0.330	-5.666481	16.85842
2016	-17.47085	10.46041	-1.67	0.095	-37.97288	3.031183
2019	3.413603	8.620258	0.40	0.692	-13.48179	20.309

30 . estat aggregation, time

ATET over time Number of obs = 28,644

(Std. err. adjusted for 2,604 clusters in county_code)

Time	ATET	Robust std. err.	z	P> z	[95% conf. interval]	
2014	-.8585637	4.578522	-0.19	0.851	-9.832302	8.115175
2015	5.459692	4.213269	1.30	0.195	-2.798164	13.71755
2016	11.47947	3.921092	2.93	0.003	3.794267	19.16467
2017	11.14059	4.323841	2.58	0.010	2.666017	19.61516
2018	6.319022	4.657509	1.36	0.175	-2.809527	15.44757
2019	12.86457	4.086501	3.15	0.002	4.855176	20.87396

31 .

32 .

33 . ** CH?

34 . gen Dhat = treatPost

35 . replace Dhat=. if Dhat==0

(21,409 real changes made, 21,409 to missing)

36 . *did_imputation crude_rate_20_64 county_code year_code Dhat, controls(perc_female perc_white perc_hispanic unemp_rate_pc poverty_rate median_i
> ncome_k) *autosample

37 .

38 . log close

name: <unnamed>

log: d:\Temp\MCP\DID\did-toolbox\Examples\medicaid.smcl

log type: smcl

closed on: 18 Jan 2026, 14:15:59