



```

name: <unnamed>
log: /hdir/0/jhaber/Projects/charter_data/sorting-schools-2019/logs/rob
> ust_district_differentials_mi5_linear_120919.smcl
log type: smcl
opened on: 9 Dec 2019, 11:11:02

1 . *
2 . * 4. RE-RUN LINEAR MIXED MODELS USING RACE/CLASS DIFFERENTIALS BETWEEN SCHOOL
> AND DISTRICT
3 . *
4 .
5 . *mi xeq: gen povertydiff = povertysd - povertyschoolprop
6 . *mi xeq: gen pocdiff = pocsd - pocschoolprop
7 .
8 . /*
> * Check nesting in these new DVs using different model parameters. These shou
> ld all be the same (CMO x state with district nested therein):
> mi xeq 1: quietly xtmixed povertydiff inquiry_full_log primary middle high ln
> age linstudents urban pctpdfs || _all:R.cmoname || _all:R.state || geodistrict
> : , nolog; xtmrho
> mi xeq 1: quietly xtmixed povertydiff readall14 mathall14 primary middle high
> lnage linstudents urban readlevel14 mathlevel14 || _all:R.cmoname || _all:R.s
> tate || geodistrict: , nolog; xtmrho
> mi xeq 1: quietly xtmixed povertydiff inquiry_full_log readall14 mathall14 pr
> imary middle high lnage linstudents urban readlevel14 mathlevel14 || _all:R.cm
> oname || _all:R.state || geodistrict: , nolog; xtmrho
>
> * Now check nesting for new race differential var:
> mi xeq 1: quietly xtmixed pocdiff inquiry_full_log primary middle high lnage
> linstudents urban pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: ,
> nolog; xtmrho
> mi xeq 1: quietly xtmixed pocdiff readall14 mathall14 primary middle high lna
> ge linstudents urban readlevel14 mathlevel14 || _all:R.cmoname || _all:R.state
> || geodistrict: , nolog; xtmrho
> mi xeq 1: quietly xtmixed pocdiff inquiry_full_log readall14 mathall14 primar
> y middle high lnage linstudents urban readlevel14 mathlevel14 || _all:R.cmonam
> e || _all:R.state || geodistrict: , nolog; xtmrho
> */
9 .
10 . * PT 1:
11 . * 0. controls only
12 . mi est, dots: mixed inquiry_full_log primary middle high lnage linstudents urb
> an pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: ,

```

Imputations (5):
..... done

Multiple-imputation estimates	Imputations	=	5
Mixed-effects ML regression	Number of obs	=	5,784

Group Variable	No. of Groups	Observations per Group		
		Minimum	Average	Maximum
_all	1	5,784	5,784.0	5,784
geodistrict	1,481	1	3.9	251

DF adjustment:	Large sample	Average RVI	=	0.0000
		Largest FMI	=	0.0000
		DF: min	=	5.14e+58
		avg	=	2.46e+61
		max	=	.
Model F test:	Equal FMI	F(7, 1.2e+64)	=	10.20
		Prob > F	=	0.0000

inquiry_full_log > al]		Coef.	Std. Err.	t	P> t	[95% Conf. Interv	
> 884	primary	.0013426	.003901	0.34	0.731	-.0063031	.0089
	middle	-.0124991	.0058186	-2.15	0.032	-.0239033	-.001
> 095	high	-.0097576	.0046736	-2.09	0.037	-.0189177	-.0005
> 976	lnage	-.0048955	.0016684	-2.93	0.003	-.0081654	-.0016
> 256	lnstudents	.0099569	.0018209	5.47	0.000	.0063881	.0135
> 258	urban	.0059421	.0039068	1.52	0.128	-.001715	.0135
> 992	pctpdfs	.118419	.0318136	3.72	0.000	.0560655	.1807
> 726	_cons	.0756538	.0130765	5.79	0.000	.0500244	.1012
> 832							

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
_all: Identity sd(R.cmoname)	.0770352	.0042986	.0690544	.0859384
_all: Identity sd(R.state)	.0264266	.00484	.0184563	.0378388
geodistrict: Identity sd(_cons)	.041052	.0030242	.0355327	.0474286
sd(Residual)	.1007134	.0011072	.0985665	.1029071

13. * 1. poverty differential

14. mi est, dots: mixed inquiry_full_log povertydiff primary middle high lnage ln
> students urban pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: ,

Imputations (5):
..... done

Multiple-imputation estimates Imputations = 5
Mixed-effects ML regression Number of obs = 5,784

Group Variable	No. of Groups	Observations per Group		
		Minimum	Average	Maximum
_all	1	5,784	5,784.0	5,784
geodistrict	1,481	1	3.9	251

DF adjustment: Large sample Average RVI = 0.0080
 Largest FMI = 0.0796
 DF: min = 676.53
 avg = 6510478.23
 max = 6.09e+07
Model F test: Equal FMI F(8,168386.0) = 22.48
 Prob > F = 0.0000

inquiry_full_log > al]	Coef.	Std. Err.	t	P> t	[95% Conf. Interv	
povertydiff	.0592817	.0059016	10.05	0.000	.0476941	.0708
> 693 primary	.0009971	.00387	0.26	0.797	-.006588	.0085
> 822 middle	-.0114772	.0057733	-1.99	0.047	-.0227927	-.0001
> 617 high	-.010757	.0046371	-2.32	0.020	-.0198455	-.0016
> 685 lnage	-.0046874	.0016527	-2.84	0.005	-.0079266	-.0014
> 481 lnstudents	.0084789	.0018086	4.69	0.000	.0049341	.0120
> 236 urban	.0092015	.003863	2.38	0.017	.0016302	.0167
> 728 pctpdfs	.1162271	.0315769	3.68	0.000	.0543371	.1781
> 172 _cons	.1072823	.0132624	8.09	0.000	.0812884	.1332
> 761						

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
_all: Identity sd(R.cmoname)	.0776407	.0043032	.0696485	.0865501
_all: Identity sd(R.state)	.0248422	.0046792	.0171735	.0359353
geodistrict: Identity sd(_cons)	.0394661	.0030177	.0339734	.0458468
sd(Residual)	.0999379	.0010996	.0978057	.1021165

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15. * 2. race differential
16.
17. * PT 2:
18. * 0. controls only
19. mi est, dots: mixed povertydiff primary middle high lnage lnstudents urban ||
> _all:R.cmoname || _all:R.state || geodistrict: ,

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Imputations (5):
..... done

Multiple-imputation estimates Imputations = 5
Mixed-effects ML regression Number of obs = 5,784

Group Variable	No. of Groups	Observations per Group		
		Minimum	Average	Maximum
_all	1	5,784	5,784.0	5,784
geodistrict	1,481	1	3.9	251

DF adjustment: Large sample Average RVI = 0.0732
 Largest FMI = 0.1272
 DF: min = 273.98
 avg = 1,735.56
 max = 6,154.19
Model F test: Equal FMI F(6, 2737.3) = 11.60
 Prob > F = 0.0000

povertydiff	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
primary	.0058325	.0094815	0.62	0.539	-.0128316	.0244967
middle	-.0187592	.0138682	-1.35	0.177	-.0460038	.0084855
high	.0165469	.0112914	1.47	0.144	-.0056677	.0387616
lnage	-.0048683	.0038841	-1.25	0.210	-.0124837	.0027471
Instudents	.0262898	.0044602	5.89	0.000	.0175092	.0350704
urban	-.0511746	.0094873	-5.39	0.000	-.069774	-.0325752
_cons	-.5432353	.0332984	-16.31	0.000	-.6086098	-.4778608

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
_all: Identity sd(R.cmoname)	.119871	.0093552	.1028656	.1396877
_all: Identity sd(R.state)	.1003302	.0147869	.0751217	.1339978
geodistrict: Identity sd(_cons)	.1141475	.0062926	.1024413	.1271914
sd(Residual)	.2291371	.0025463	.2241943	.2341889

20. * 1. IBL

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21. mi est, dots: mixed povertydiff inquiry_full_log primary middle high lnage ln
> students urban pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: ,
```

```
Imputations (5):
..... done
```

Multiple-imputation estimates	Imputations	=	5
Mixed-effects ML regression	Number of obs	=	5,784

Group Variable	No. of Groups	Observations per Group		
		Minimum	Average	Maximum
<u>_all</u> geodistrict	1 1,481	5,784 1	5,784.0 3.9	5,784 251

		Average RVI	=	0.0920
		Largest FMI	=	0.2455
DF adjustment:	Large sample	DF: min	=	78.04
		avg	=	1,428.15
		max	=	6,063.18
Model F test:	Equal FMI	F(8, 2428.5)	=	20.02
		Prob > F	=	0.0000

		Coef.	Std. Err.	t	P> t	[95% Conf. Interv
inquiry_full_log		.2980827	.0311036	9.58	0.000	.2369654 .3
primary		.0056184	.0094111	0.60	0.551	-.0129089 .0241
middle		-.0148101	.0138035	-1.07	0.284	-.0419352 .012
high		.019316	.0112136	1.72	0.086	-.002748 .0413
lnage		-.0033594	.0038617	-0.87	0.384	-.0109316 .0042
lnstudents		.0231182	.0044473	5.20	0.000	.0143598 .0318
urban		-.0534828	.0093823	-5.70	0.000	-.0718772 -.0350

```

> 883      pctpdfs | -.0289489 .0822014 -0.35 0.726 -.1925979 .1347
> 002      _cons | -.5654291 .0329519 -17.16 0.000 -.6301121 -.500
> 746

```

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
_all: Identity sd(R.cmoname)	.1230211	.0093998	.1059078	.1428998
_all: Identity sd(R.state)	.0981291	.0146403	.0732035	.1315418
geodistrict: Identity sd(_cons)	.111094	.0062608	.0994568	.1240928
sd(Residual)	.2273012	.0025023	.2224459	.2322625

```

22. * 2. academic performance
23. mi est, dots: mixed povertydiff readall14 mathall14 primary middle high lnage
> | students urban readlevel14 mathlevel14 || _all:R.cmoname || _all:R.state |
> | geodistrict: ,

```

Imputations (5):
..... done

Multiple-imputation estimates Imputations = 5
Mixed-effects ML regression Number of obs = 5,784

Group Variable	No. of Groups	Observations per Group		
		Minimum	Average	Maximum
_all	1	5,784	5,784.0	5,784
geodistrict	1,481	1	3.9	251

DF adjustment: Large sample Average RVI = 0.2379
 Largest FMI = 0.4183
 DF: min = 27.98
 avg = 483.87
 max = 3,860.63
Model F test: Equal FMI F(10, 674.1) = 106.73
 Prob > F = 0.0000

povertydiff	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
readall14	.4502869	.0268736	16.76	0.000	.3968857	.5036882
mathall14	.1076342	.0304014	3.54	0.001	.0453574	.1699111
primary	-.0098241	.0087568	-1.12	0.263	-.0270827	.0074344
middle	-.0298769	.0126965	-2.35	0.019	-.0548079	-.004946
high	-.0028179	.0117612	-0.24	0.812	-.0265196	.0208838
lnage	-.0158607	.0037635	-4.21	0.000	-.0232842	-.0084373
lnstudents	.0052468	.0049462	1.06	0.292	-.0045983	.0150919
urban	-.0380344	.008599	-4.42	0.000	-.0549315	-.0211373
readlevel14	-.0002094	.0008236	-0.25	0.799	-.0018274	.0014086
mathlevel14	.0000869	.0008748	0.10	0.921	-.0016566	.0018304
_cons	-.6657689	.038597	-17.25	0.000	-.7424508	-.589087

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
_all: Identity sd(R.cmoname)	.115362	.0084651	.099904	.1332118
_all: Identity sd(R.state)	.1113467	.0149484	.0855432	.1449337
geodistrict: Identity sd(_cons)	.086382	.0057722	.0757282	.0985346
sd(Residual)	.2100046	.0025379	.2050061	.2151251

24. * 3. fully specified

25. mi est, dots: mixed povertydiff inquiry_full_log readall14 mathall14 primary
> middle high lnage lnstudents urban pctpdfs readlevel14 mathlevel14 || _all:R.
> cmoname || _all:R.state || geodistrict: ,

Imputations (5):

..... done

Multiple-imputation estimates
Mixed-effects ML regression

Imputations = 5
Number of obs = 5,784

Group Variable	No. of Groups	Observations per Group		
		Minimum	Average	Maximum
_all	1	5,784	5,784.0	5,784
geodistrict	1,481	1	3.9	251

DF adjustment: **Large sample**

Average RVI = 0.2410
Largest FMI = 0.4206
DF: min = 27.67
avg = 405.71
max = 3,495.13

Model F test: **Equal FMI**

F(12, 847.0) = 92.84
Prob > F = 0.0000

povertydiff	Coef.	Std. Err.	t	P> t	[95% Conf. Interv	
> al]						
inquiry_full_log	.1830893	.0293397	6.24	0.000	.1252618	.2409
> 167						
readall14	.4326319	.0274055	15.79	0.000	.3779713	.4872
> 925						
mathall14	.1136335	.0303555	3.74	0.001	.0514196	.1758
> 474						
primary	-.0098216	.008726	-1.13	0.262	-.0270199	.0073
> 766						
middle	-.0270379	.0126789	-2.13	0.033	-.0519378	-.002
> 138						
high	-.0008486	.0117295	-0.07	0.943	-.0244898	.0227
> 927						
lnage	-.0146503	.0037628	-3.89	0.000	-.0220752	-.0072
> 254						
lnstudents	.0041918	.0049651	0.84	0.401	-.005706	.0140
> 896						
urban	-.0396862	.0085798	-4.63	0.000	-.0565505	-.0228
> 219						
pctpdfs	-.001292	.0770948	-0.02	0.987	-.1559875	.1534
> 035						
readlevel14	-.0002181	.0008219	-0.27	0.791	-.0018331	.001
> 397						
mathlevel14	.0001699	.000866	0.20	0.845	-.0015536	.0018
> 933						

```

      _cons |   -.6792979   .0383311   -17.72   0.000   -.7554253   -.6031
> 706

```

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
_all: Identity sd(R.cmoname)	.1163875	.0084754	.1009019	.1342496
_all: Identity sd(R.state)	.1094317	.0148264	.0838622	.1427974
geodistrict: Identity sd(_cons)	.0853869	.0057723	.074732	.0975608
sd(Residual)	.209226	.0024928	.2043295	.2142399

```

26.
27. * PT 3:
28. * 0. controls only
29. mi est, dots: mixed pocdiff primary middle high lnage lnstudents urban || _al
> l:R.cmoname || _all:R.state || geodistrict: ,

```

Imputations (5):
..... done

```

Multiple-imputation estimates      Imputations      =      5
Mixed-effects ML regression      Number of obs      =      5,784

```

Group Variable	No. of Groups	Observations per Group		
		Minimum	Average	Maximum
_all	1	5,784	5,784.0	5,784
geodistrict	1,481	1	3.9	251

```

                                Average RVI      =      0.0057
                                Largest FMI       =      0.0177
DF adjustment:  Large sample  DF:   min        =      12,918.88
                                avg          =      3.56e+09
                                max          =      3.91e+10
Model F test:   Equal FMI     F(   6,532219.2) =      25.88
                                Prob > F       =      0.0000

```

pocdiff	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
primary	-.0326782	.0069225	-4.72	0.000	-.0462461	-.0191103
middle	-.0458543	.010215	-4.49	0.000	-.0658753	-.0258332
high	-.0401534	.008306	-4.83	0.000	-.0564332	-.0238736
lnage	.0102715	.0030002	3.42	0.001	.0043908	.0161523
lnstudents	.0037366	.0033023	1.13	0.258	-.0027359	.010209
urban	-.0774944	.0079261	-9.78	0.000	-.0930292	-.0619595
_cons	-.2536046	.0275384	-9.21	0.000	-.3075788	-.1996304

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
_all: Identity sd(R.cmoname)	.1044545	.0069381	.0917039	.118978
_all: Identity sd(R.state)	.1018291	.0141104	.0776106	.133605
geodistrict: Identity sd(_cons)	.1310743	.0047239	.1221342	.1406688

sd(Residual)	.1714492	.0018715	.1678201	.1751568
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30. * 1. IBL

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31. mi est, dots: mixed pocdiff inquiry_full_log primary middle high lnage lnstud
> ents urban pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: ,
```

```
Imputations (5):
..... done
```

Multiple-imputation estimates	Imputations	=	5
Mixed-effects ML regression	Number of obs	=	5,784

Group Variable	No. of Groups	Observations per Group		
		Minimum	Average	Maximum
_all	1	5,784	5,784.0	5,784
geodistrict	1,481	1	3.9	251

		Average RVI	=	0.0056
		Largest FMI	=	0.0207
DF adjustment:	Large sample	DF: min	=	9,517.80
		avg	=	1.47e+09
		max	=	1.91e+10
Model F test:	Equal FMI	F(8, 969100.4)	=	40.01
		Prob > F	=	0.0000

		Coef.	Std. Err.	t	P> t	[95% Conf. Interv
> al]	pcodiff					
inquiry_full_log		.2917836	.0230479	12.66	0.000	.2466103 .3369
> 569	primary	-.0326914	.0068229	-4.79	0.000	-.0460641 -.0193
> 186	middle	-.0419655	.0100689	-4.17	0.000	-.0617002 -.0222
> 308	high	-.0373082	.0081908	-4.55	0.000	-.0533621 -.0212
> 543	lnage	.011538	.0029593	3.90	0.000	.0057373 .0173
> 386	lnstudents	.0009235	.0032668	0.28	0.777	-.0054793 .0073
> 262	urban	-.0793676	.007835	-10.13	0.000	-.0947238 -.0640
> 113	pctpdfs	-.1072002	.05686	-1.89	0.059	-.2186439 .0042
> 436	_cons	-.2762554	.0273151	-10.11	0.000	-.329792 -.2227
> 188						

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
_all: Identity sd(R.cmoname)	.1053186	.0068921	.0926405	.1197317
_all: Identity sd(R.state)	.1011843	.013972	.0771926	.1326327
geodistrict: Identity sd(_cons)	.1309567	.0047002	.1220601	.1405019
sd(Residual)	.1686073	.0018453	.1650291	.1722631


```

32. * 2. academic performance
33. mi est, dots: mixed pocdiff readall14 mathall14 primary middle high lnage lns
> tudents urban readlevel14 mathlevel14 || _all:R.cmoname || _all:R.state || ge
> odistrict: ,

```

Imputations (5):
 done

Multiple-imputation estimates Imputations = 5
 Mixed-effects ML regression Number of obs = 5,784

Group Variable	No. of Groups	Observations per Group		
		Minimum	Average	Maximum
_all	1	5,784	5,784.0	5,784
geodistrict	1,481	1	3.9	251

DF adjustment: **Large sample** Average RVI = 0.0972
 Largest FMI = 0.4163
 DF: min = 28.24
 avg = 28,819.06
 max = 151,937.20
 Model F test: **Equal FMI** F(10, 2214.1) = 101.62
 Prob > F = 0.0000

pocdiff	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
readall14	.3274931	.0190997	17.15	0.000	.2900407	.3649455
mathall14	.0560295	.0209192	2.68	0.009	.0145665	.0974926
primary	-.0414025	.0064702	-6.40	0.000	-.0540849	-.0287202
middle	-.0527131	.0095105	-5.54	0.000	-.0713535	-.0340728
high	-.0522472	.0080213	-6.51	0.000	-.067989	-.0365055
lnage	.0019757	.0028131	0.70	0.483	-.0035402	.0074917
lnstudents	-.012301	.0035145	-3.50	0.000	-.0191896	-.0054124
urban	-.0690041	.0074998	-9.20	0.000	-.0837063	-.0543019
readlevel14	-.0004909	.0007777	-0.63	0.533	-.0020833	.0011015
mathlevel14	.0000452	.0007151	0.06	0.950	-.0013962	.0014865
_cons	-.3260709	.0293254	-11.12	0.000	-.3835492	-.2685926

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
_all: Identity				
sd(R.cmoname)	.105661	.0066866	.0933342	.1196157
_all: Identity				
sd(R.state)	.1047695	.0141405	.0804171	.1364963
geodistrict: Identity				
sd(_cons)	.1293885	.0044765	.1209055	.1384667
sd(Residual)	.1562983	.0017512	.1529025	.1597695

```

34. * 3. fully specified
35. mi est, dots: mixed pocdiff inquiry_full_log readall14 mathall14 primary midd
> le high lnage lnstudents urban pctpdfs readlevel14 mathlevel14 || _all:R.cmon
> ame || _all:R.state || geodistrict: ,

```

Imputations (5):
 done

Multiple-imputation estimates Imputations = 5
 Mixed-effects ML regression Number of obs = 5,784

Group Variable	No. of Groups	Observations per Group		
		Minimum	Average	Maximum
_all	1	5,784	5,784.0	5,784
geodistrict	1,481	1	3.9	251

DF adjustment: **Large sample** Average RVI = **0.0907**
 Largest FMI = **0.4417**
 DF: min = **25.13**
 avg = **26,364.93**
 max = **166,167.19**
 Model F test: **Equal FMI** F(12, 3403.5) = **94.78**
 Prob > F = **0.0000**

	pocdiff	Coef.	Std. Err.	t	P> t	[95% Conf. Interv	
> al]							
inquiry_full_log		.2121909	.0217037	9.78	0.000	.1696498	.254
> 732	readall14	.3080822	.0193437	15.93	0.000	.2701125	.3460
> 519	mathall14	.0619555	.020945	2.96	0.004	.0203598	.1035
> 512	primary	-.0411969	.006406	-6.43	0.000	-.0537534	-.0286
> 405	middle	-.049415	.0094256	-5.24	0.000	-.0678889	-.030
> 941	high	-.0498268	.0079401	-6.28	0.000	-.0654075	-.0342
> 462	lnage	.0032076	.0027907	1.15	0.250	-.0022643	.0086
> 796	lnstudents	-.0133336	.0034881	-3.82	0.000	-.0201704	-.0064
> 967	urban	-.0707137	.0074471	-9.50	0.000	-.0853122	-.0561
> 152	pctpdfs	-.0987475	.0532425	-1.85	0.064	-.2031111	.0056
> 162	readlevel14	-.0004871	.0007847	-0.62	0.540	-.0021029	.0011
> 286	mathlevel14	.0001218	.0007142	0.17	0.865	-.0013209	.0015
> 645	_cons	-.3421537	.0291368	-11.74	0.000	-.3992627	-.2850
> 446							

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
_all: Identity				
sd(R.cmoname)	.1052144	.006626	.0929953	.1190391
_all: Identity				
sd(R.state)	.1038115	.0140096	.0796842	.1352441
geodistrict: Identity				
sd(_cons)	.1297943	.0044636	.121334	.1388445
sd(Residual)	.1546572	.0017303	.1513021	.1580867

```
36.  
37. log close  
    name: <unnamed>  
    log: /hdir/0/jhaber/Projects/charter_data/sorting-schools-2019/logs/rob  
> ust_district_differentials_mi5_linear_120919.smcl  
    log type: smcl  
closed on: 9 Dec 2019, 16:49:25
```
