

Is it enough to increase the school leaving age to decrease dropping out?

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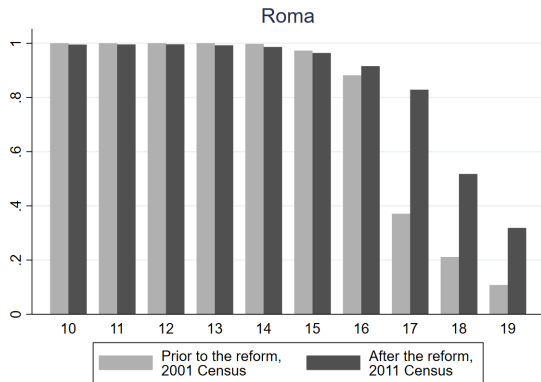
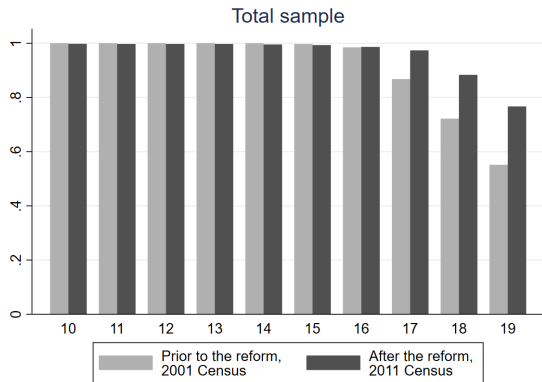
Introduction

- Compulsory school leaving (CSL) age is a widely used education policy tool
 - It introduces a constraint into making decision about schooling investments
- Huge literature on the effects of increased CSL age on various social and economic outcomes: mixed evidence
 - Positive (Oreopoulos, 2007; Devereux and Hart, 2010) vs. no (Oosterbeek and Webbink, 2007; Pischke and Wachter, 2008) wage returns
 - Effects are heterogenous by social background (Meghir and Palme, 2005)
 - Most papers looked at increases up until age 16
- We know little about what it does within schools
 - induce teachers to reduce the effort they put in teaching (Green and Navarro Paniagua, 2012)
 - increase criminal behavior of students within school (Anderson et al., 2013)
 - decreases dropping out (Cabus and De Witte, 2011) but might have no effect on high-school completion (Landis and Reschly, 2010)

Increasing the CSL age in Hungary

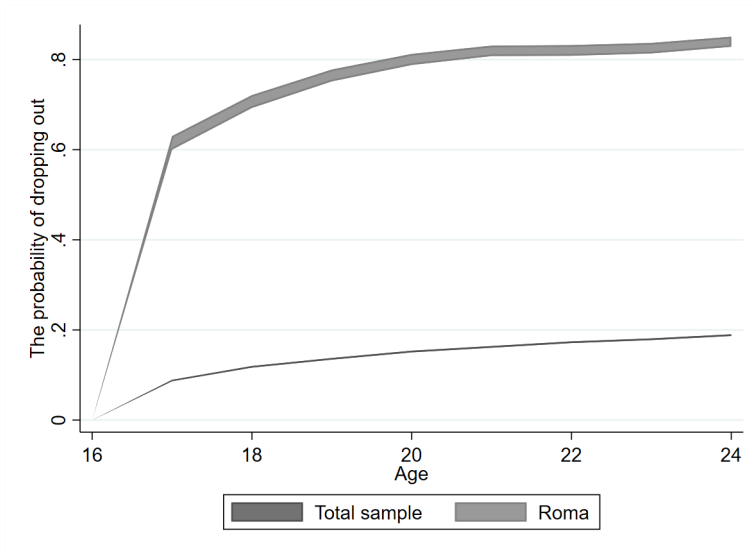
- I am estimating the effects of increasing the CSL age from 16 to 18 in Hungary in 1996 on schooling and labor market outcomes
- Introduced for those starting elementary school in Sept 1998 [born in 1991]
 - Decided in 1996, came into force in 1998
 - The No. of students in the school system started to increase only in 2007-2008 when the first treated cohort reached age 16 - implementation shifted to a new government
 - No additional resources were allocated to schools in the meantime
 - (CSL age was cut back to 16 in 2011)
- I find no effects on dropping out, earning a degree or employment at age 20 and 25
- Sort of a banal explanation: at-risk students were too old to be meaningfully affected
- Vocational training schools might have had a key role: the probability of dropping out even increased in vocational training schools

The share of those in school before and after the reform



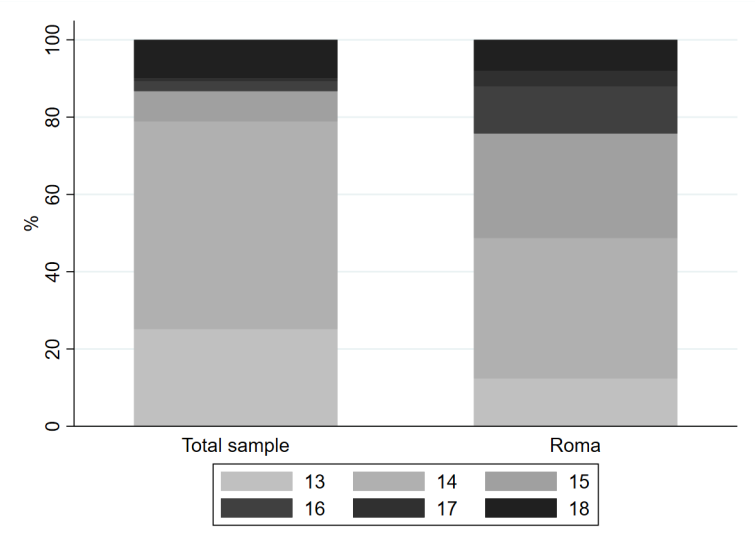
No. of observations: 2001: 1,293,104 and 42,201; 2011: 1,083,602 and 68,490.

The share of dropouts before the reform in 2001



No. of observations: 1,561,429 and 45,212.

The distribution of eight-graders by age before the reform in 2001



No. of observations: 127,035 and 3,758.

Identification strategy

- The new CSL age of 18 was introduced with those starting elementary school in Sept 1998
- Enrolment rule: reaching age 6 by May 31
 - Cutoff: being born at June 1, 1991
 - First stage: jump in the probability of being exposed to the reform around the cutoff (0.33)
 - Problems: date-of-birth effects, different age
 - Differences in regression discontinuities design identification strategy (DRDD): RDD estimates of the reform cohort are compared to the same estimates of comparison cohorts
 - (Local) ITT effects ($LATE = ITT / 0.33$)

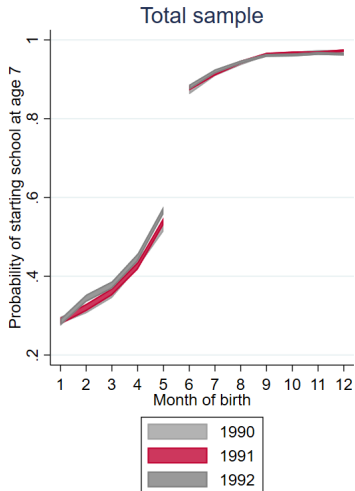
Identification assumptions

- No manipulation of school enrollment in 1998 (no defiers)
- Parallel trends of RDD coefficients in the comparison cohorts
- No date-of-birth effects - Local ITT effects around the cutoff

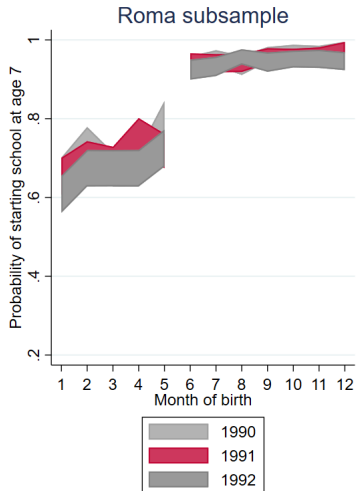
Data

- First stage: elementary school enrollment
 - 2001 Census (age 10): month and year of birth, No. of completed grades of elementary school, ethnicity
- Outcomes
 - School participation, employment, highest degree, dropping out, school type
 - 2011 Census (age 20)
 - 2016 Micro Census (age 25)
 - 2001 Census: comparison cohorts at age 20 and 25 in 2001
- Suggestive evidence on the composition of vocational training schools
 - National Assessment of Basic Competences (NABC) database
- Aggregate admin data on grade retention

First stage: primary school enrollment at age 7 by year of birth

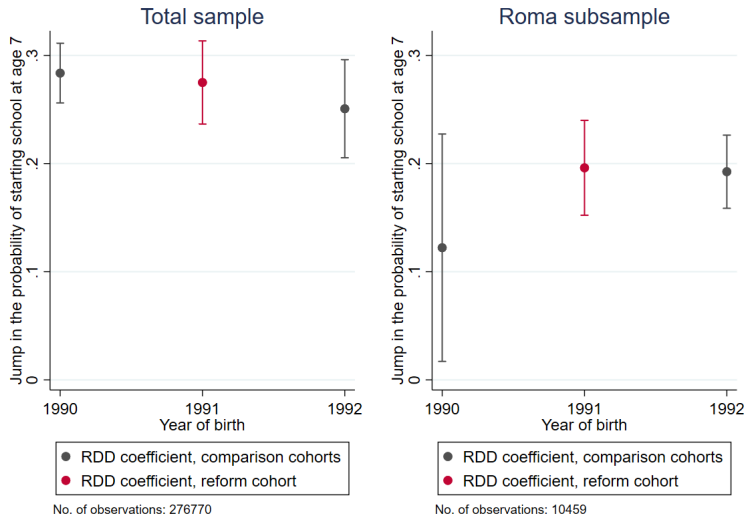


No. of observations: 370344

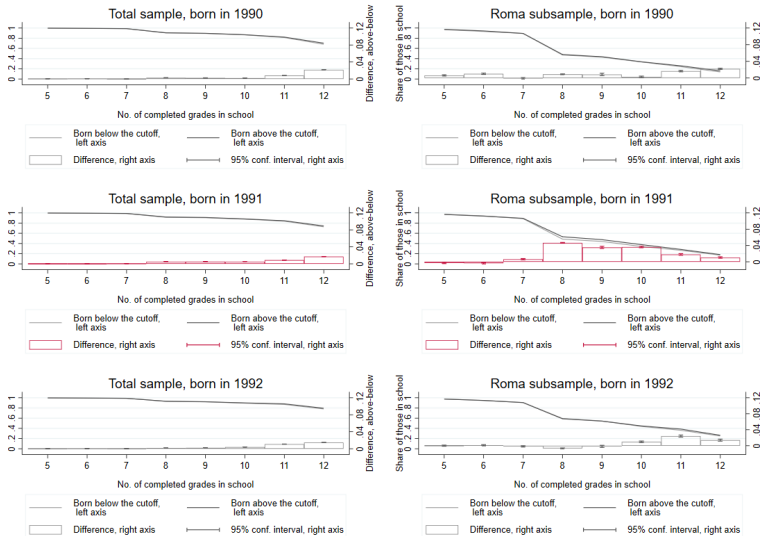


No. of observations: 14147

First stage: jump in the probability primary school enrollment at age 7 around the cutoff by year of birth

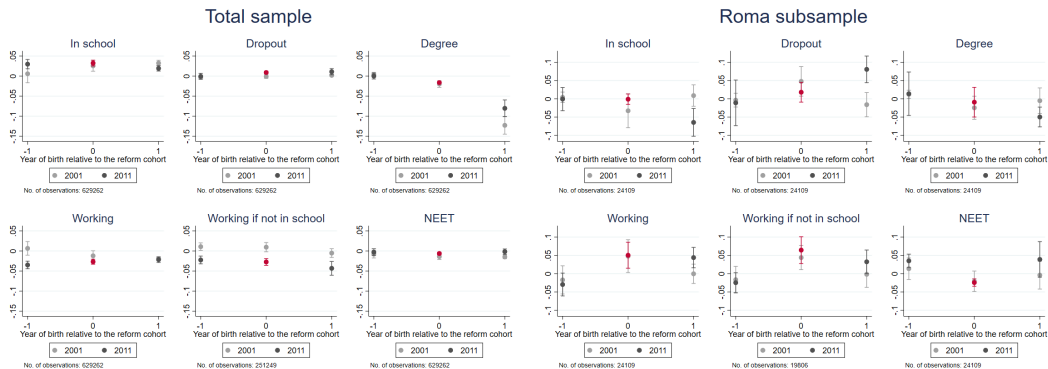


The number of completed school years around the cutoff

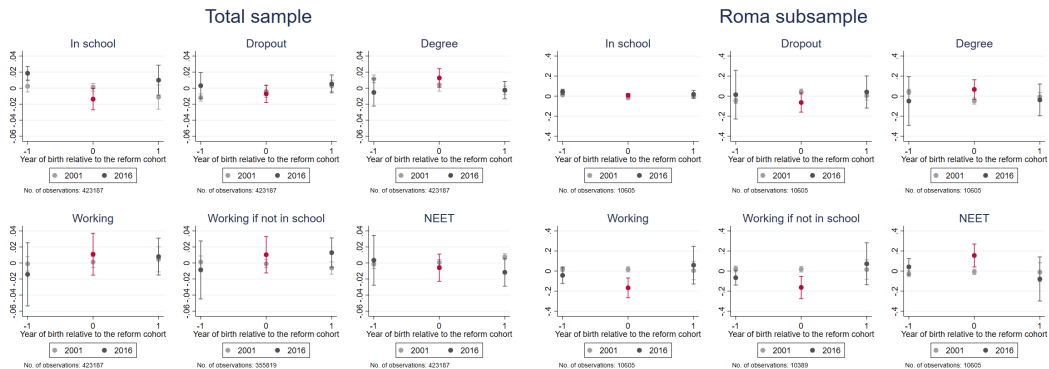


of observations: 276770 and 10459.

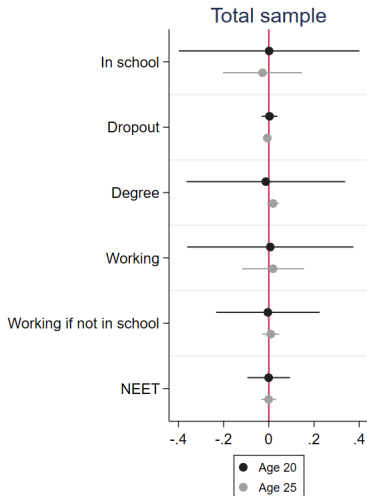
RDD estimates in the reform and comparison cohorts - age 20



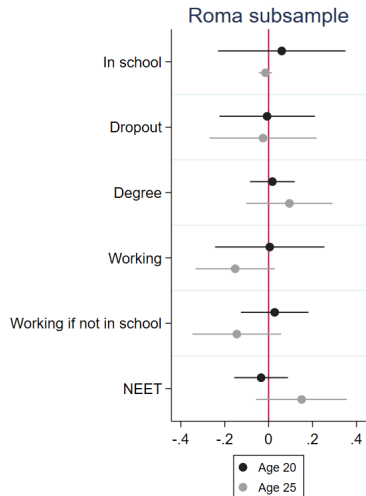
RDD estimates in the reform and comparison cohorts - age 25



DRDD estimates



No. of observations: 603688 and 42208:



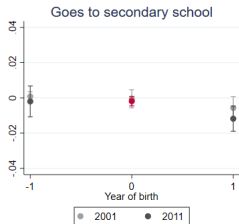
No. of observations: 22771 and 10515.

Robustness checks

- DRDD estimates with alternative bandwidths (3,4 and 5 months) [▶ DRDD alternative bandwidths](#)
- DiD estimates [▶ DiD parallel trends, age 20](#) [▶ DiD parallel trends, age 25](#) [▶ DiD estimates](#)

Potential channels

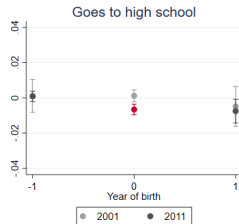
Total sample



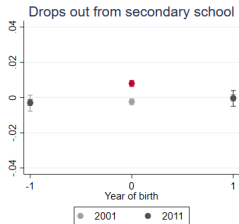
No. of observations: 629262



No. of observations: 603951



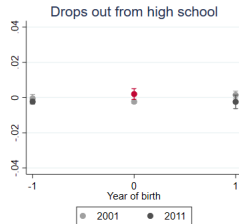
No. of observations: 603951



No. of observations: 556654

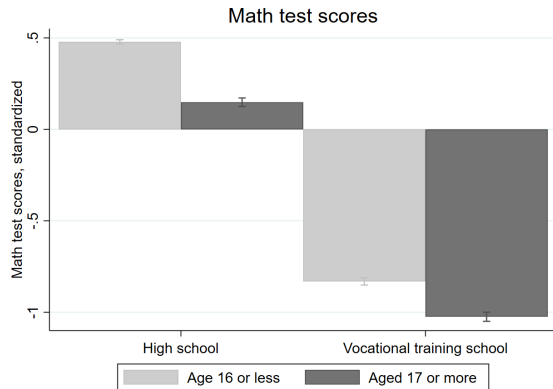
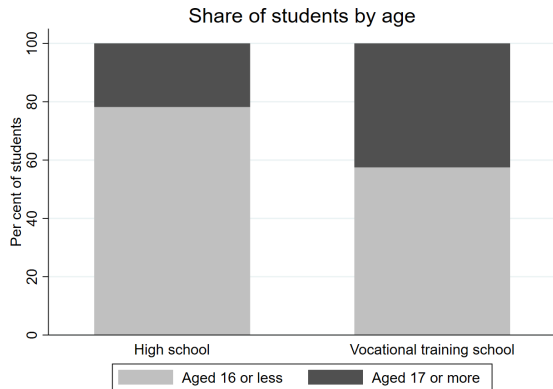


No. of observations: 165273



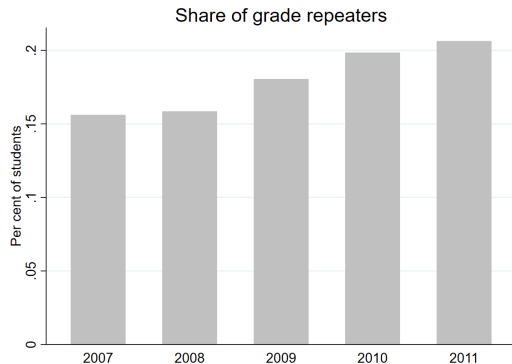
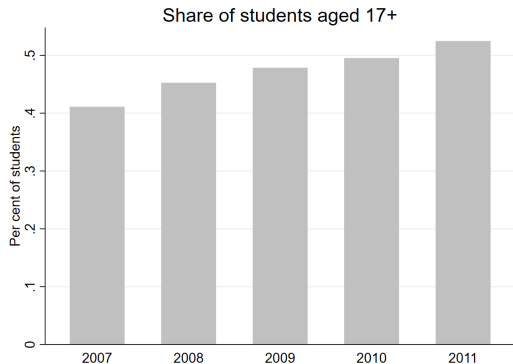
No. of observations: 464185

Vocational training schools before the reform in 2007



Source: NABC, 2007

Vocational training schools after the reform



Source: NABC

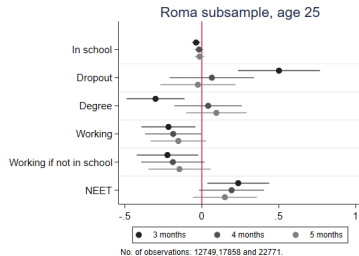
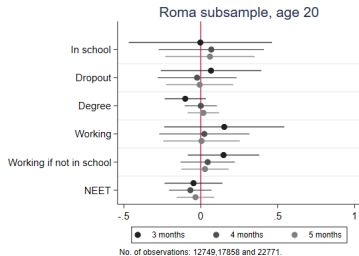
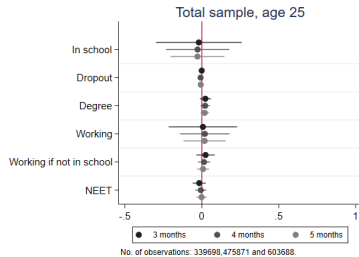
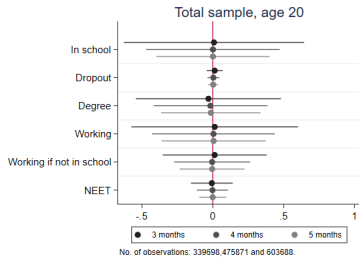
Discussion

- The reform had no effects on average on dropping out of school, earning a degree or employment at age 20 and 25
- No effects found on the most vulnerable students either
 - Some adverse effects on vocational school students
- Hypothesis 1: most at-risk students were relatively too old to be affected
- Hypothesis 2: most at-risk students attended vocational training schools and crowded-out resources
- Policy conclusion: not enough to set a CSL age, compulsory schooling should last until earning a secondary degree

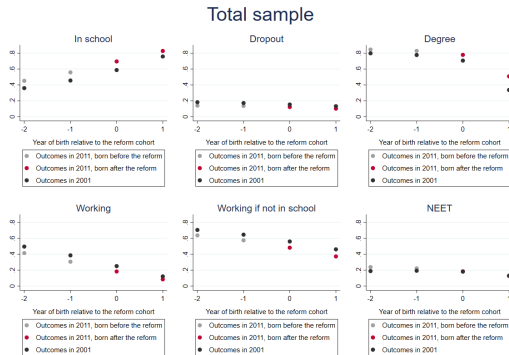
Thanks for your attention!

Appendix

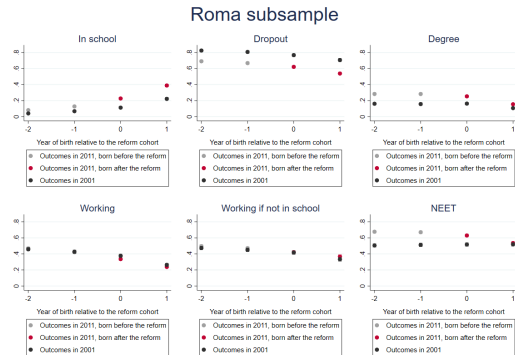
DRDD estimates with alternative bandwidths



DiD estimates - parallel trends (age 20)

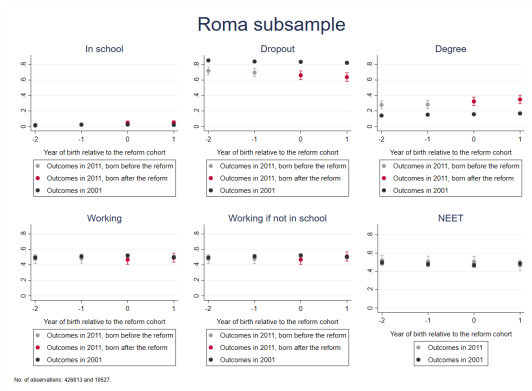
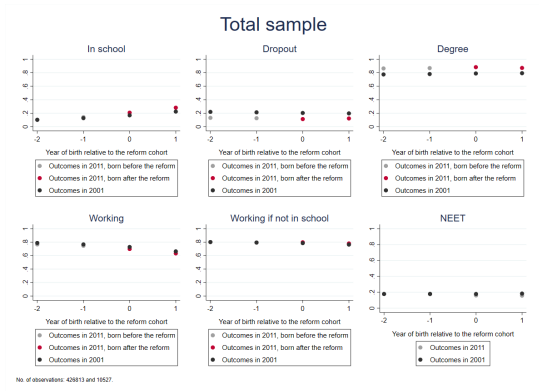


No. of observations: 621228 and 23190.

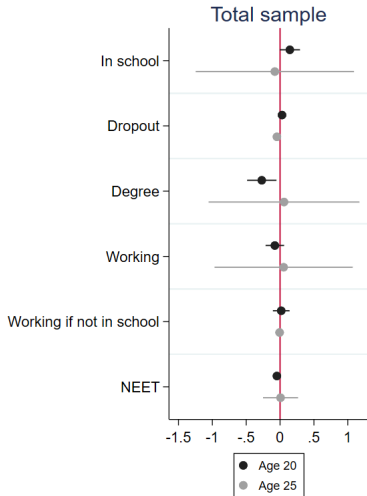


No. of observations: 621228 and 23190.

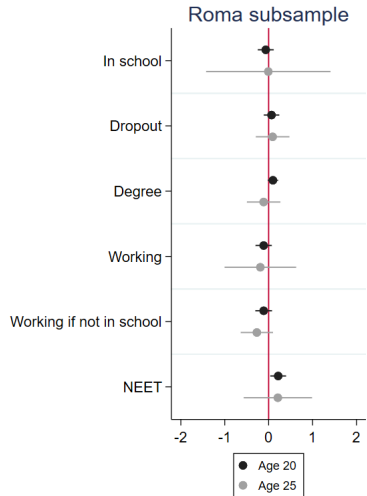
DiD estimates - parallel trends (age 25)



DiD estimates



No. of observations: 621255 and 71417.



No. of observations: 23196 and 21294.