Economics 172
Issues in African Economic Development

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Issues in African Economic Development

Lecture 16 – March 8, 2007

The Girls Scholarship Program (GSP)

- GSP is a randomized evaluation of a merit award for Grade 6 girls in Busia and Teso districts, Kenya
- 64 treatment schools, 63 comparison schools
- The top 15% of girls in program schools (by district) received a $38 prize for school fees and supplies over two years, and a public awards ceremony

Two GSP research questions

(#1) What impact do these incentives have on test scores and other measures of school performance?

→ Randomized evaluation methods

(#2) What impact does winning the GSP award have on later schooling choices and outcomes? In particular does it make it more likely that winners stay in school?

→ Regression discontinuity methods ☆

The Girls Scholarship Program (GSP)

- The randomization “worked”: treatment and comparison group schools are similar at baseline (Table 3, Figure 5)

	---------Girls---------		
Panel A: Busia District	Program	Comparison	Difference (s.e.)
Age in 2001	13.5	13.4	0.0
			(0.1)
Father's education (years)	5.2	5.2	0.2
			(0.5)
Mother's education (years)	4.6	4.6	0.1
			(0.4)
Total children in household	7.0	6.5	0.5
			(0.5)
Proportion ethnic Luhya	0.49	0.47	0.03
			(0.05)
Latrine ownership	0.96	0.94	0.02
			(0.01)
Iron roof ownership	0.77	0.77	0.00
			(0.03)
Mosquito net ownership	0.33	0.33	0.00
			(0.03)
Test Score 2000–Baseline sample (cohort 1 only)	-0.05	-0.12	0.07
			(0.18)
Test Score 2000–Main sample (cohort 1 only)	0.07	0.03	0.04
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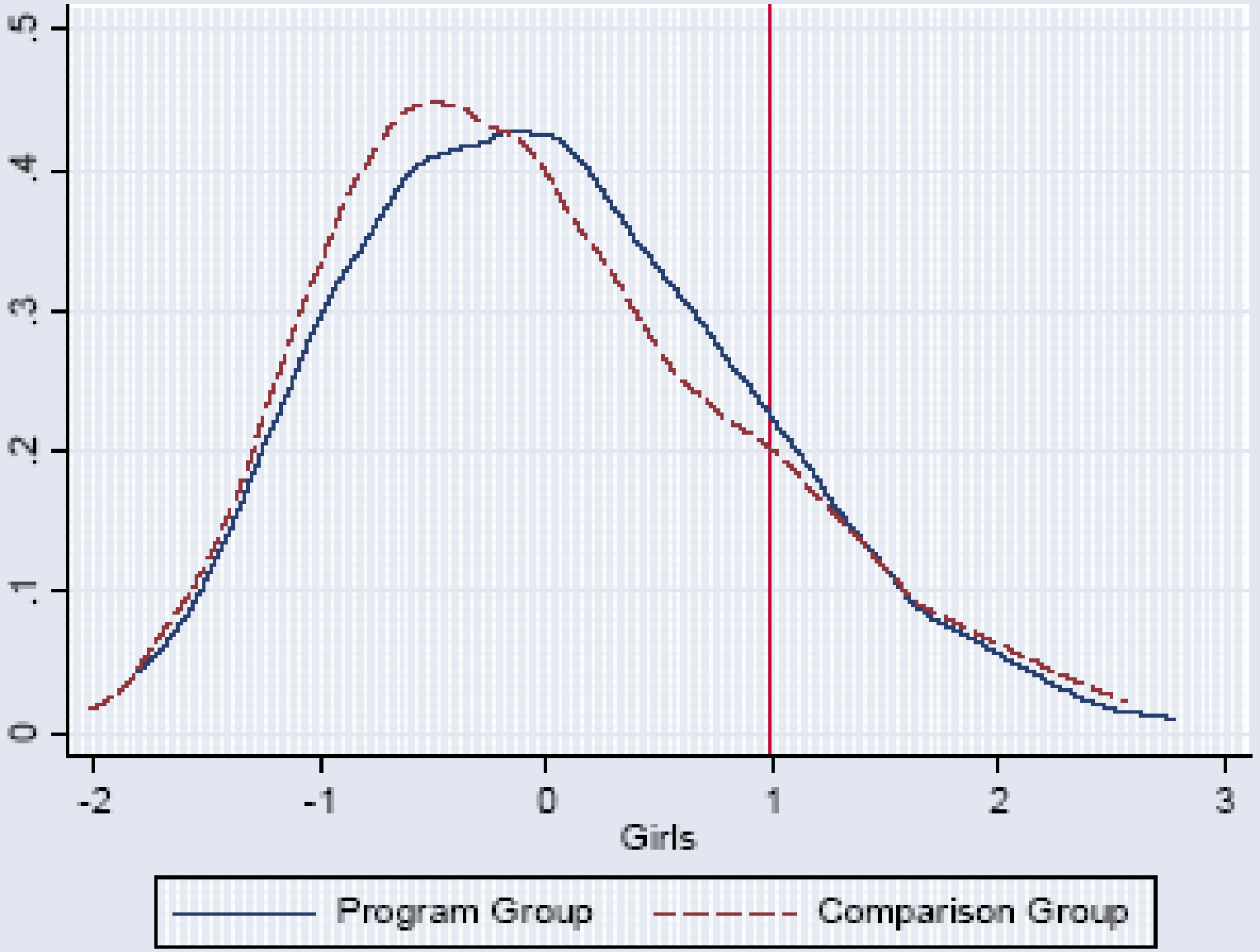
Panel (A)



Why might incentives have an impact? Theoretical perspectives

- Extrinsic motivation (exploiting immediate gratification)
- vs. Intrinsic motivation ("love of learning")

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- Parent encouragement / pressure on the girls
- Community mobilization to support the program

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- Impacts are positive and quite large for cohort 1: 0.12-0.13 standard deviations on average (Table 4)

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- Impacts are positive and quite large for cohort 1: 0.12-0.13 standard deviations on average (Table 4)
- There are positive effects for boys, too – even though they were not eligible for the prize! Externalities
- Positive effects are concentrated in Busia district (gains of 0.2 s.d.), but are zero in Teso district

Table 4: Program Impact on Test Scores
Longitudinal Sample, Cohort 1 Girls and Boys

	Dependent variable: Normalized test scores from 2001 and 2002				
	Busia and Teso districts			Busia district	Teso district
	(1)	(2)	(3)	(4)	(5)
Program school	0.12	0.13**	0.12*	0.19**	-0.02
	(0.13)	(0.06)	(0.07)	(0.08)	(0.09)
Male * Program School			0.01	0.01	0.01
			(0.05)	(0.05)	(0.09)
Male			0.16***	0.09**	0.28***
			(0.04)	(0.04)	(0.07)
Individual test score, 2000		0.80***	0.79***	0.85***	0.69***
		(0.02)	(0.02)	(0.03)	(0.02)
Sample Size	4294	4294	4294	2858	1436
R^2	0.00	0.61	0.61	0.67	0.53
Mean of dependent variable	0.13	0.13	0.13	0.13	0.12

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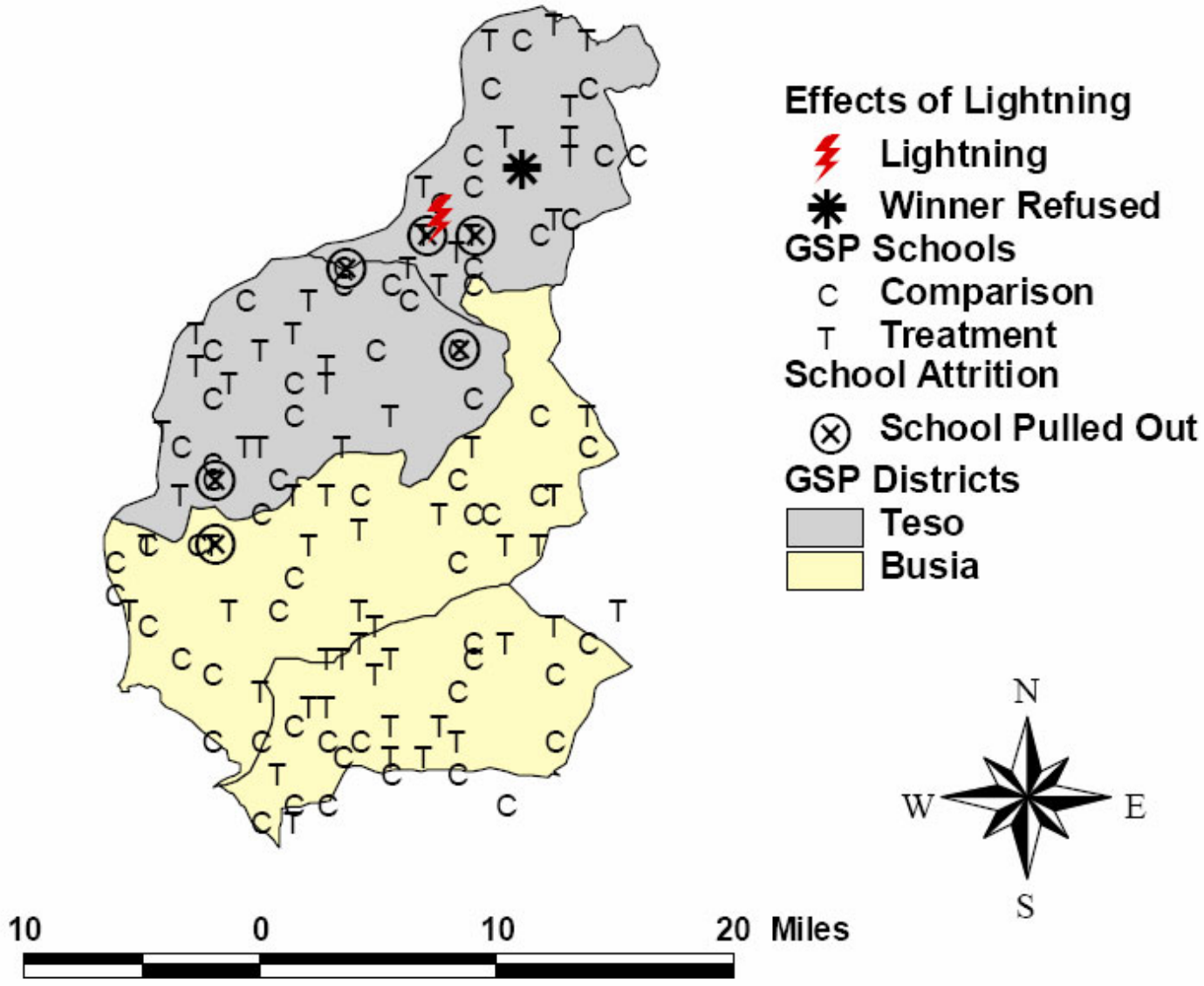
Difficulties in Teso district

- This NGO, and other NGOs, have long had trouble introducing new projects into Teso district
- The dominant ethnic groups are different in Busia district and Teso district

- There was a tragic lightning strike incident in a Teso district primary school in April 2001 – seven students died (27 injured), and NGO project work became even more difficult afterwards. Five Teso district schools pulled out of the program

Figure 1: Map of Busia District and Teso District, Kenya,
with location of Girls Scholarship Program Schools (legend below)



Why are there program effects in Busia?

- Student school participation increased by 5 percentage points in program schools (Table 7), for girls and boys in Busia district
- Teacher attendance increased 5 percentage points
- There are no significant changes in students' study habits, work at home, or attitudes toward education / intrinsic motivation (Table 6)

	Busia and Teso Districts	
	---------Girls---------	
Dependent Variables:	Estimated impact (s.e.)	Mean (s.d.) of dep. var.
Panel A: Attitudes towards education		
Student prefers school to other activities (index) [a]	0.02	0.72
	(0.01)	(0.18)
Student thinks s/he is a "good student"	0.02	0.73
	(0.04)	(0.44)
Student thinks being a "good student" means "working hard"	-0.02	0.69
	(0.03)	(0.46)
Student thinks can be in top three in the class	0.00	0.33
	(0.04)	(0.47)
Panel B: Study/Work habits		
Student went for extra coaching in last two days	-0.04	0.40
	(0.04)	(0.49)
Student used a textbook at home in last week	0.01	0.85
	(0.03)	(0.36)
Student did homework in last two days	0.03	0.78
	(0.04)	(0.41)
Teacher asked the student a question in class in last two days	0.03	0.81
	(0.04)	(0.39)
Amount of time did chores at home [b]	0.02	2.63
	(0.05)	(0.82)
Panel C: Educational Inputs		
Number of textbooks at home	0.09	3.83
	(0.19)	(2.15)
Number of new books bought in last term	0.15	1.54
	(0.14)	(1.48)

What are the policy implications?

- Positive impacts:

  -- Test scores improved more than any other project we have studied in Kenya, and for relatively low cost

  -- GSP could promote empowerment of women and changes in social norms about girls' education

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- Possible concerns / limitations:

  -- Will the impacts last? In the long-run, will GSP destroy the love of learning in these kids?

What is the impact of winning the award?

- US$38 is a lot of money in rural Kenya

  -- This money went to pay for school fees, and was supposed to be used for school supplies

- Did winning the award make girls more likely to stay in school in the medium-run, through 2005-2006? (by easing credit constraints for poor households?)

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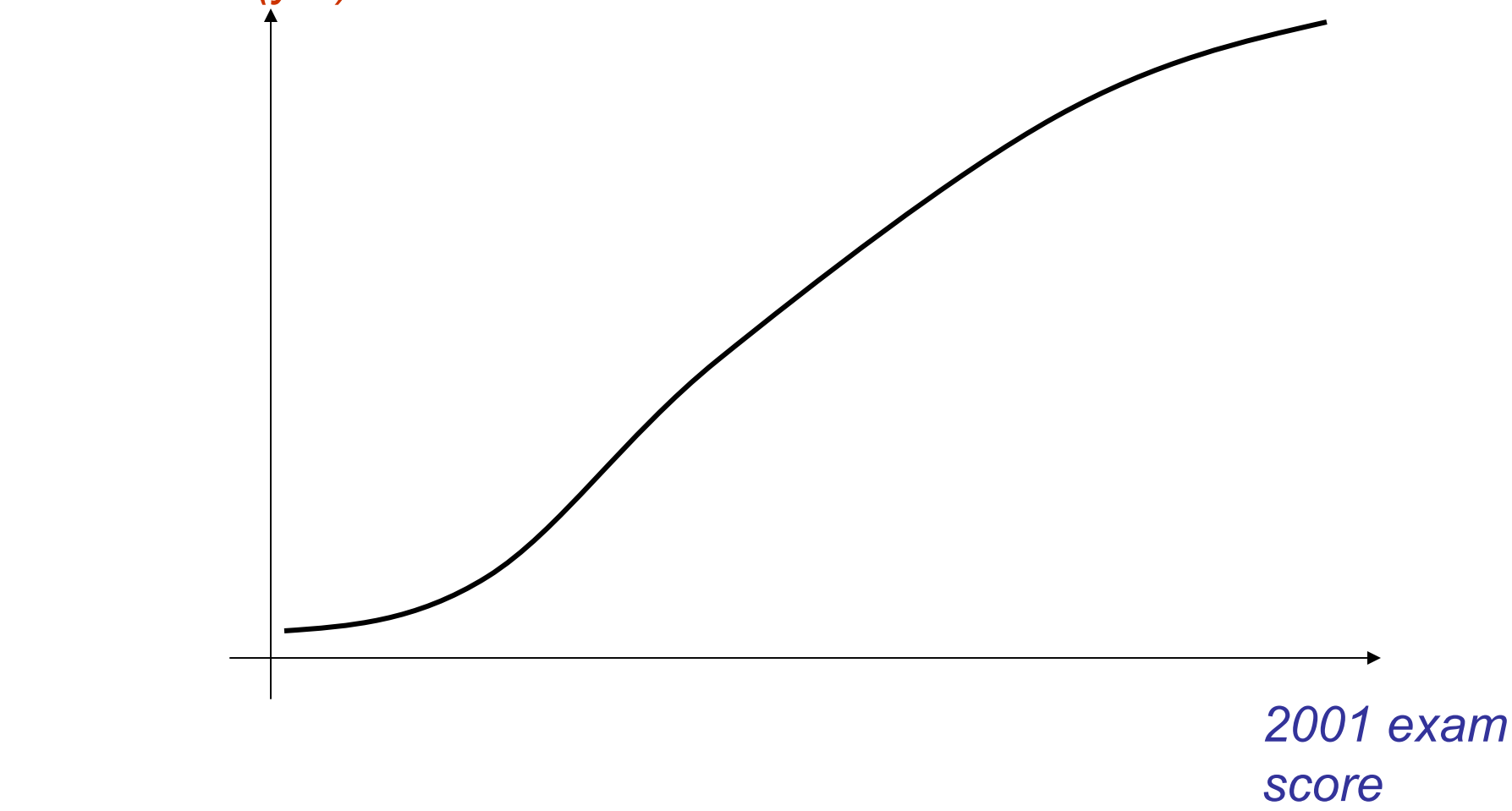
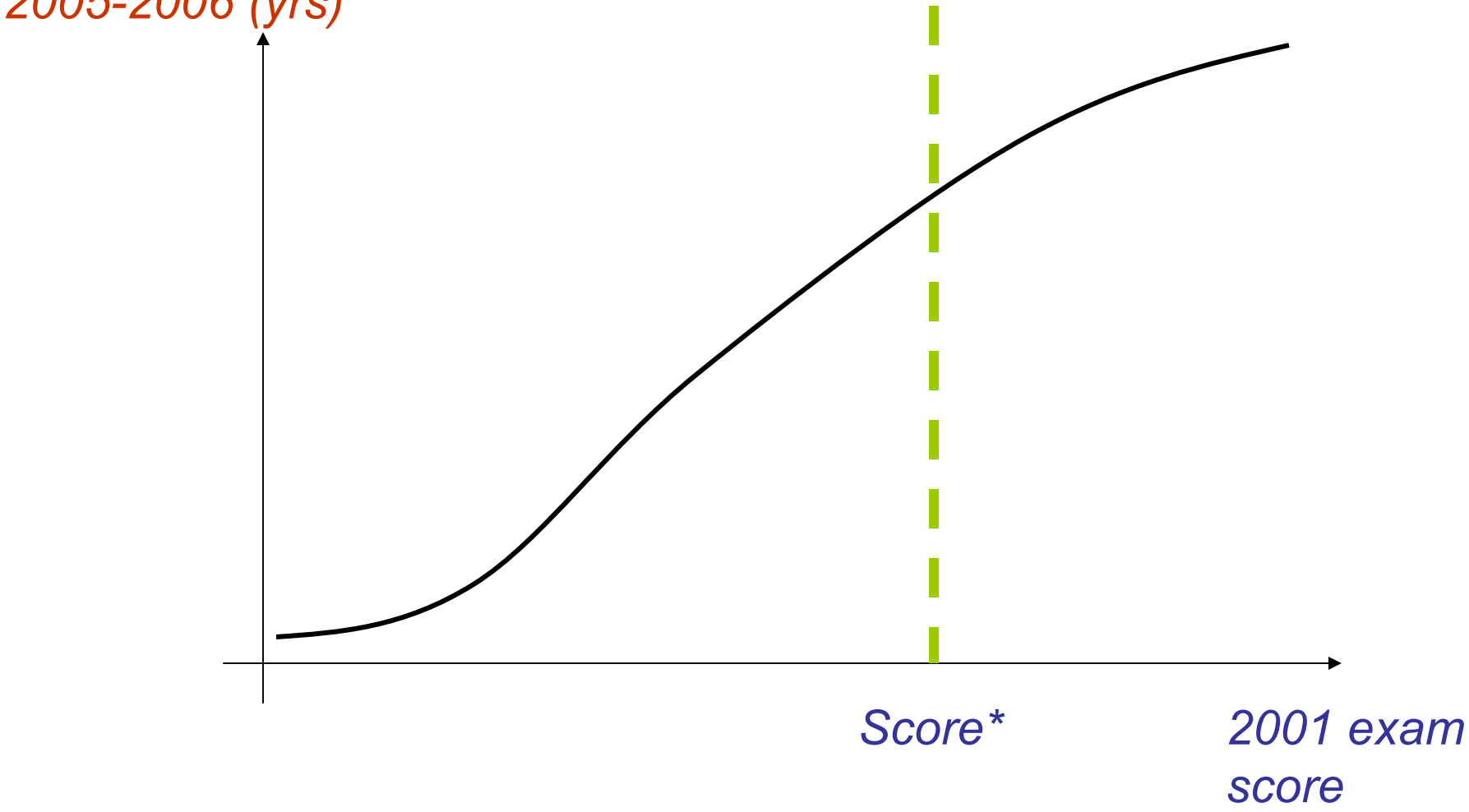
- The problem for evaluation: winners are not randomly chosen. Winning is a function of one's academic performance, which we expect to have a large effect on later school attainment


Educational attainment 2005-2006 (yrs)
2001 exam score


Educational attainment 2005-2006 (yrs)
Score*
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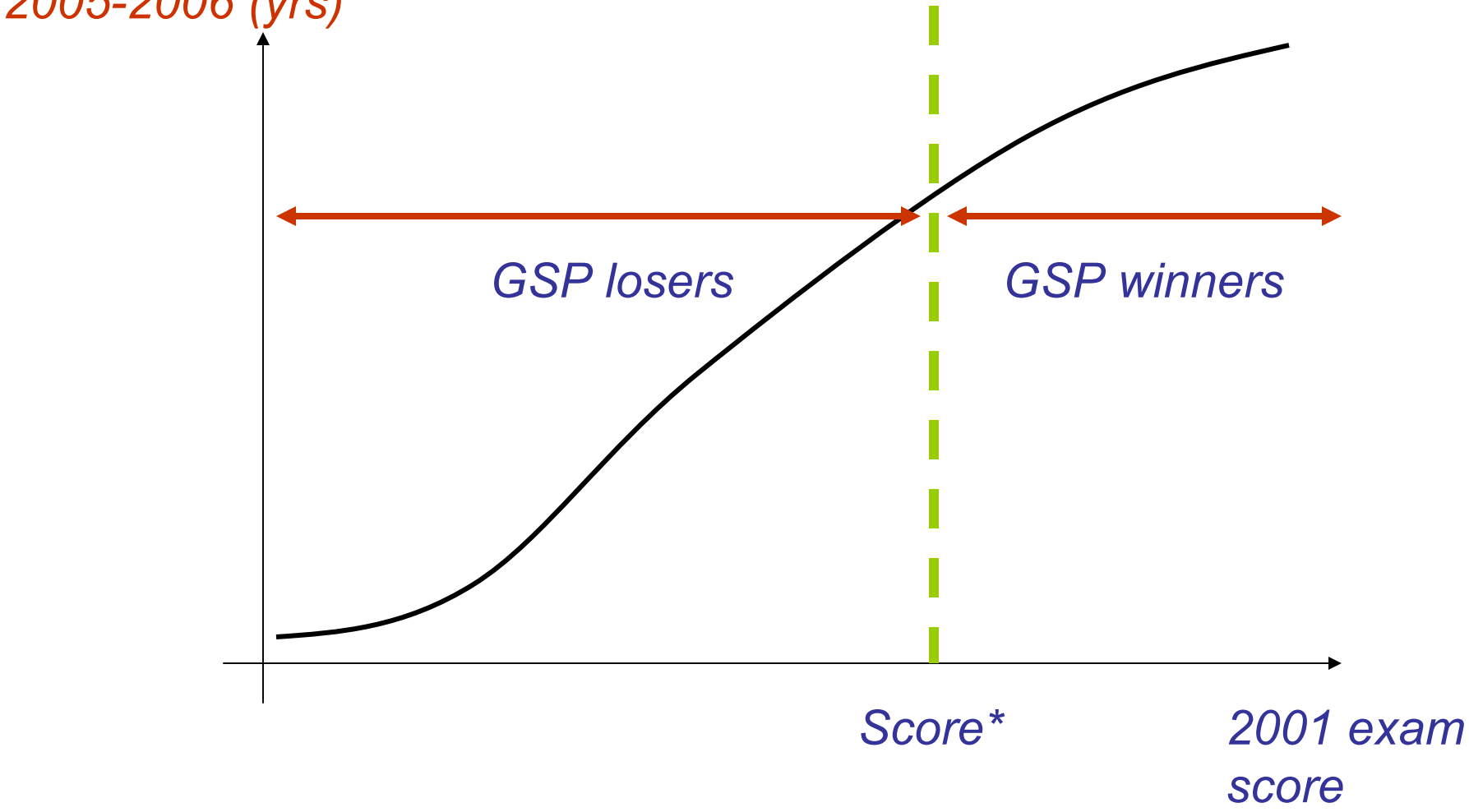
Educational attainment 2005-2006 (yrs)
GSP losers
GSP winners
Score*
2001 exam score

The regression discontinuity (RD) approach

- Clearly comparing winners to losers is not a very appealing strategy: the winners are much better students, so losers are not a natural comparison group

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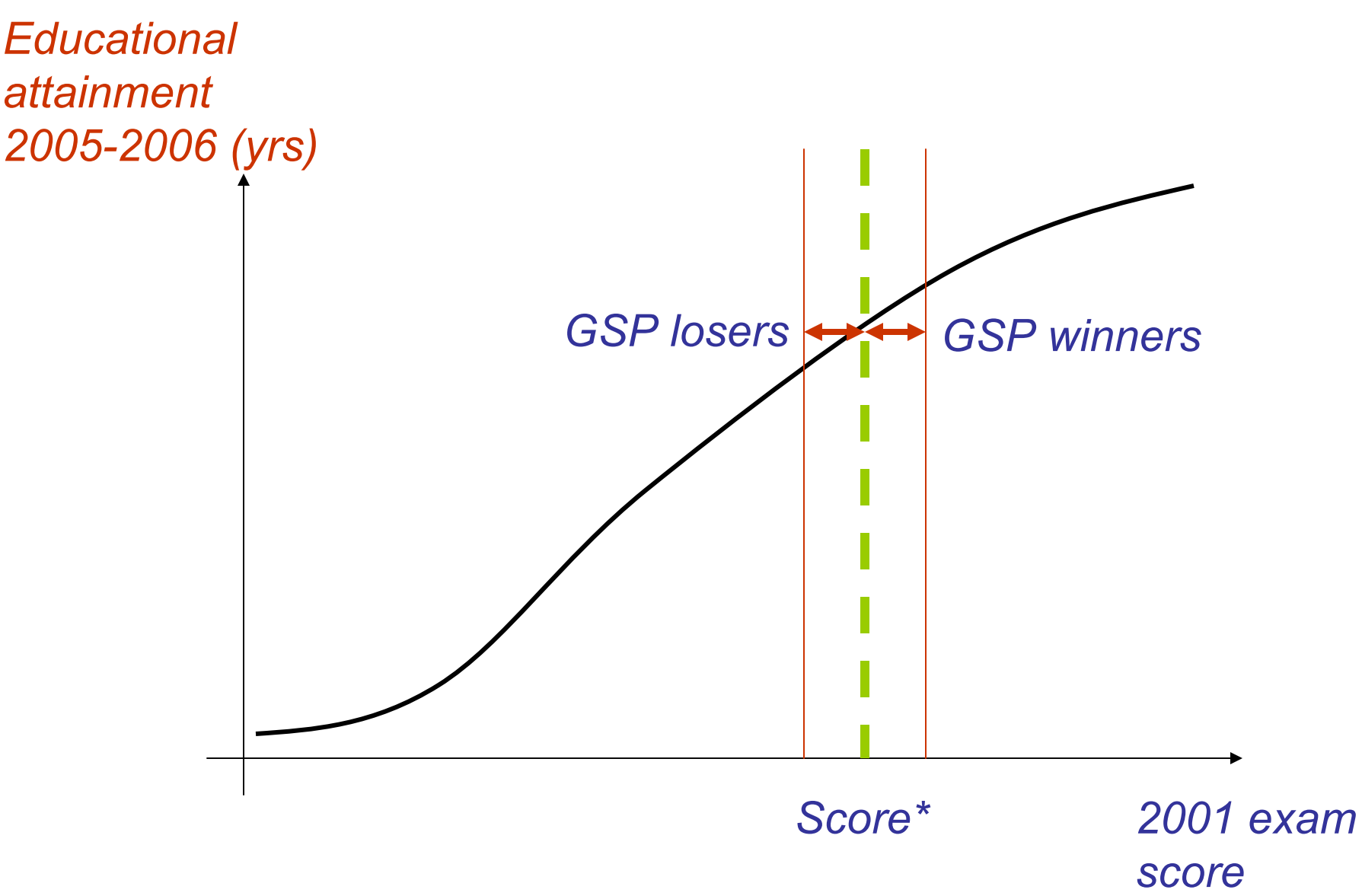
- One way to get around this is to focus on students "very close to" the winning threshold test score level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- In the limit, comparing the student who just barely won (receiving *Score**) to the student who just barely lost (*Score** – ε) yields a comparison group of losers almost identical to winners

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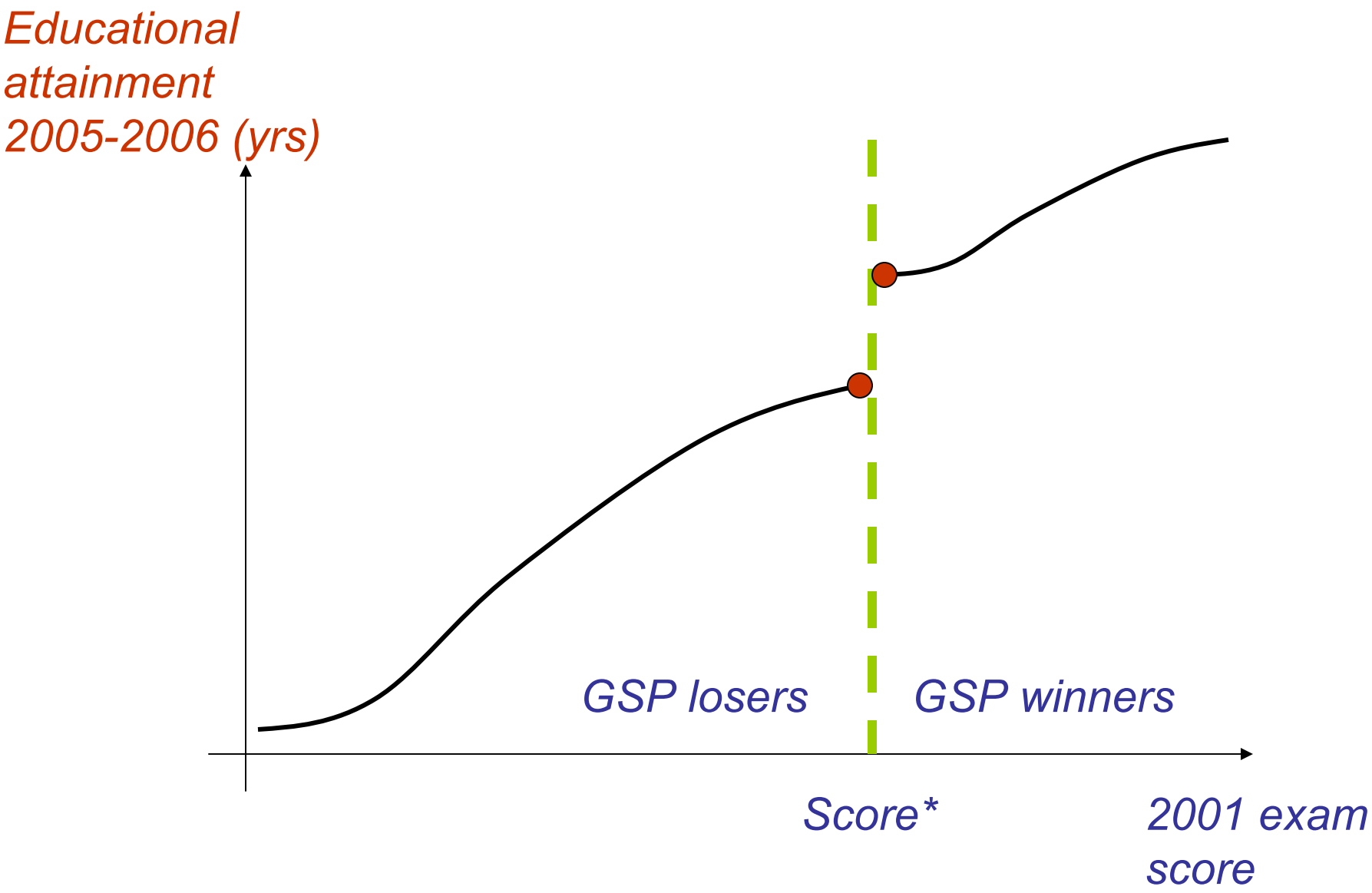
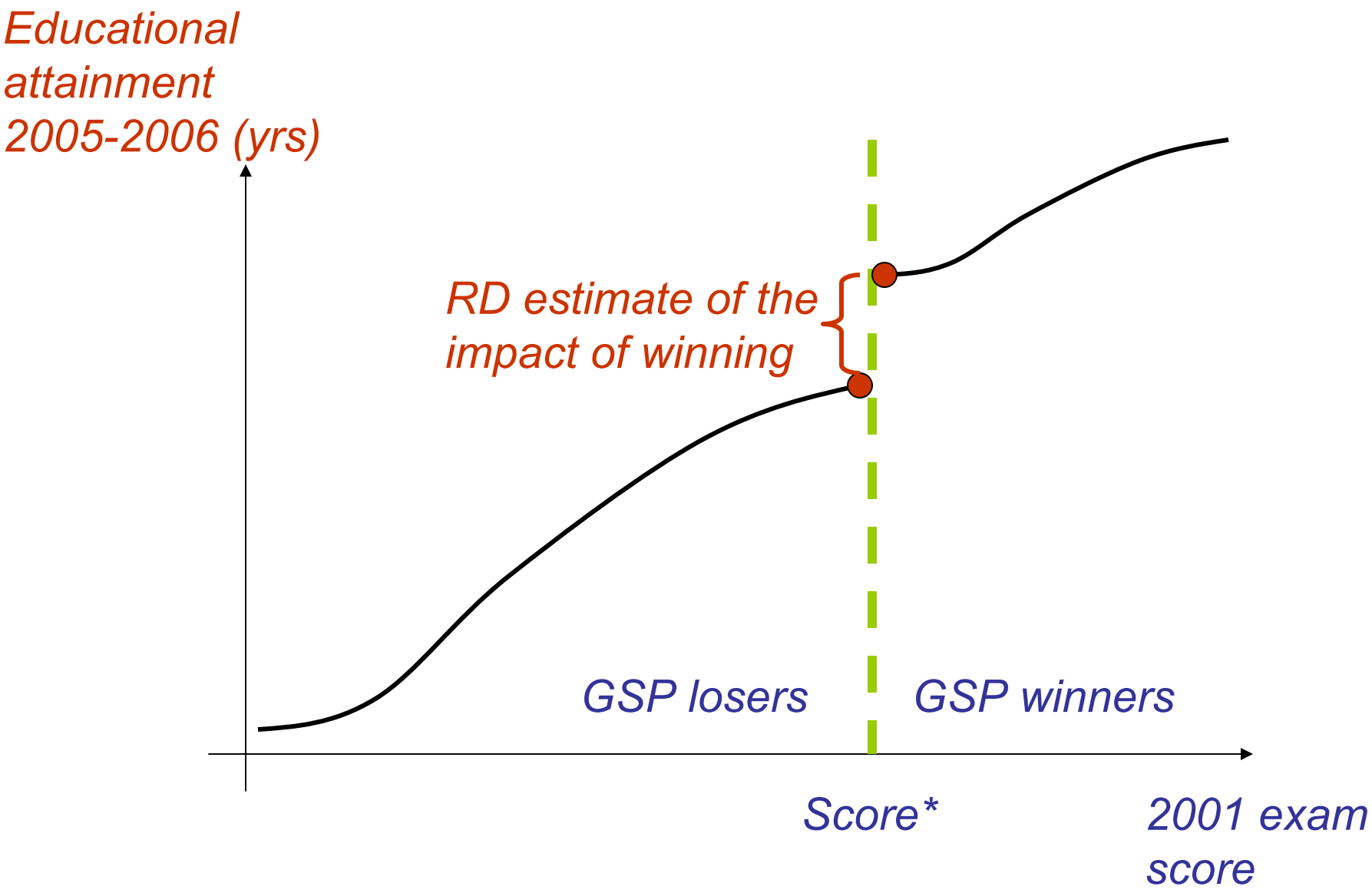
- This discontinuity is the RD estimate of the impact of winning the scholarship on later school enrollment


Educational attainment 2005-2006 (yrs)
GSP losers
GSP winners
Score*
2001 exam score


Educational attainment 2005-2006 (yrs)
RD estimate of the impact of winning
GSP losers
GSP winners
Score*
2001 exam score

The GSP Tracking Project (2005-2007)

- Between September 2005 – February 2007, an attempt was made to find and survey all of the GSP sample girls in Busia district. The goal: the estimate longer-term impacts of the program on their educational attainment, labor market success, marriage and fertility choices, and health

- We managed to survey 82% of the sample. The data is literally brand new (as of last week ;) but some results are starting to trickle in…

The GSP Tracking Project (2005-2007)

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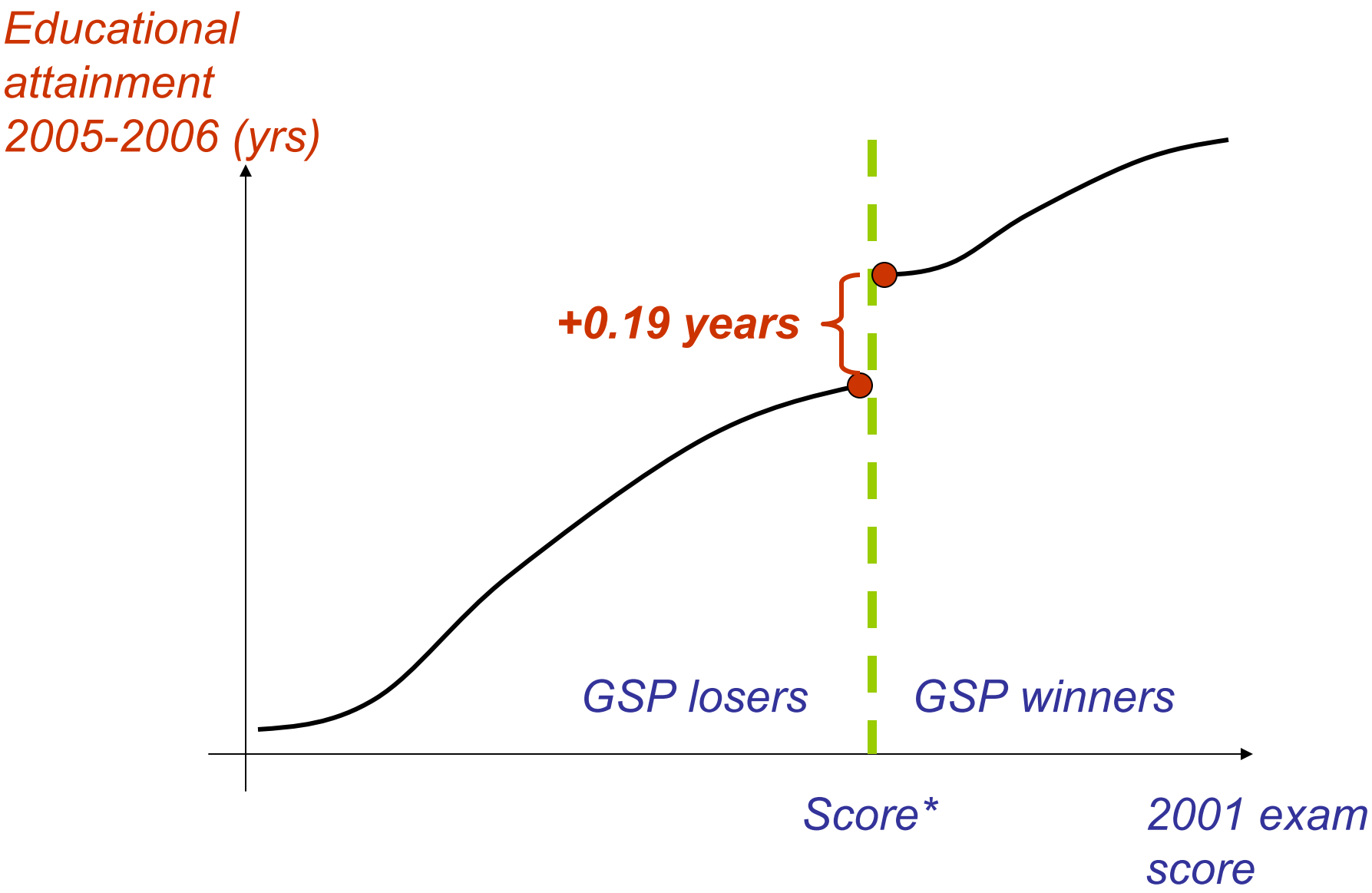
  (2) GSP winners (within the treatment schools) have attained an additional 0.19 years of schooling!


Educational attainment 2005-2006 (yrs)
+0.19 years
GSP losers
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Score*
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Using the RD approach

- More generally RD methods can be used whenever program / treatment assignment has a “sharp discontinuity”, in other words, a very rapid change in the likelihood of assignment with respect to an underlying “smooth” variable (here, the test score)

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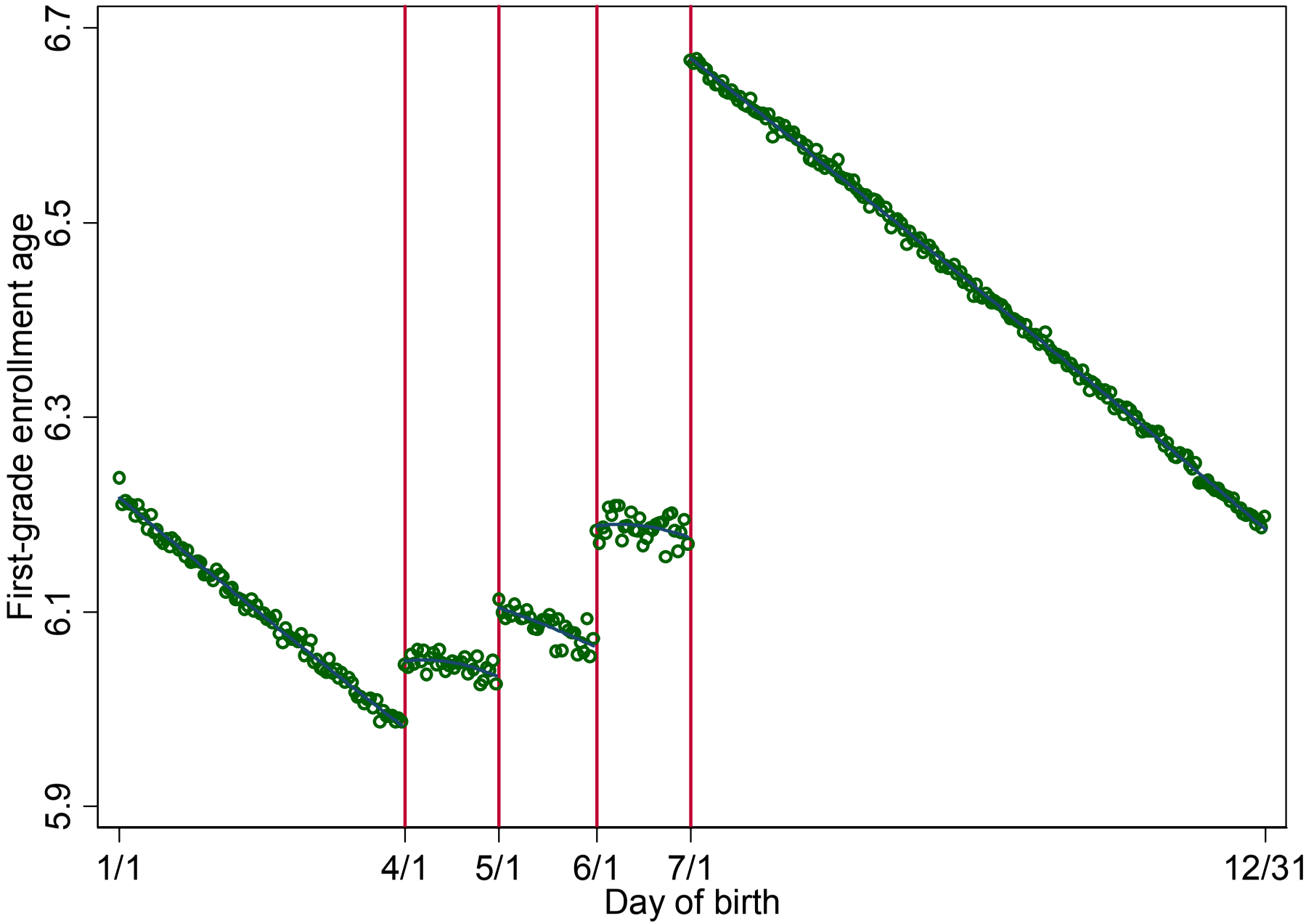
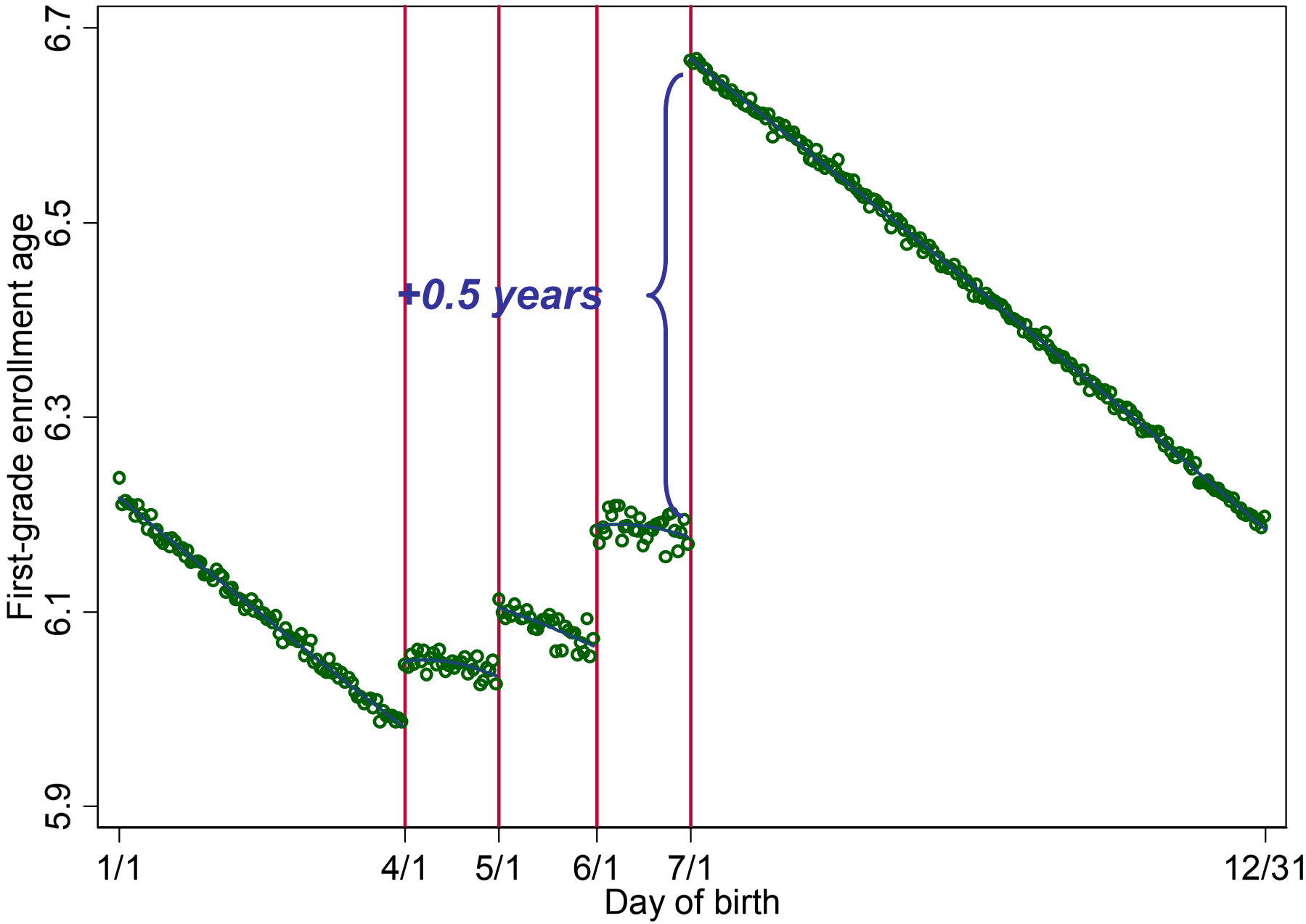
- For example, in Chile there is a strict July 1st cut-off for enrollment in first grade. How does being born on June 30th versus July 1st (i.e., being very young for one’s grade versus older) affect children’s primary school outcomes?


First-grade enrollment age
6.7
6.5
6.3
6.1
5.9
1/1
4/1
5/1
6/1
7/1
12/31
Day of birth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1/1
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6/1
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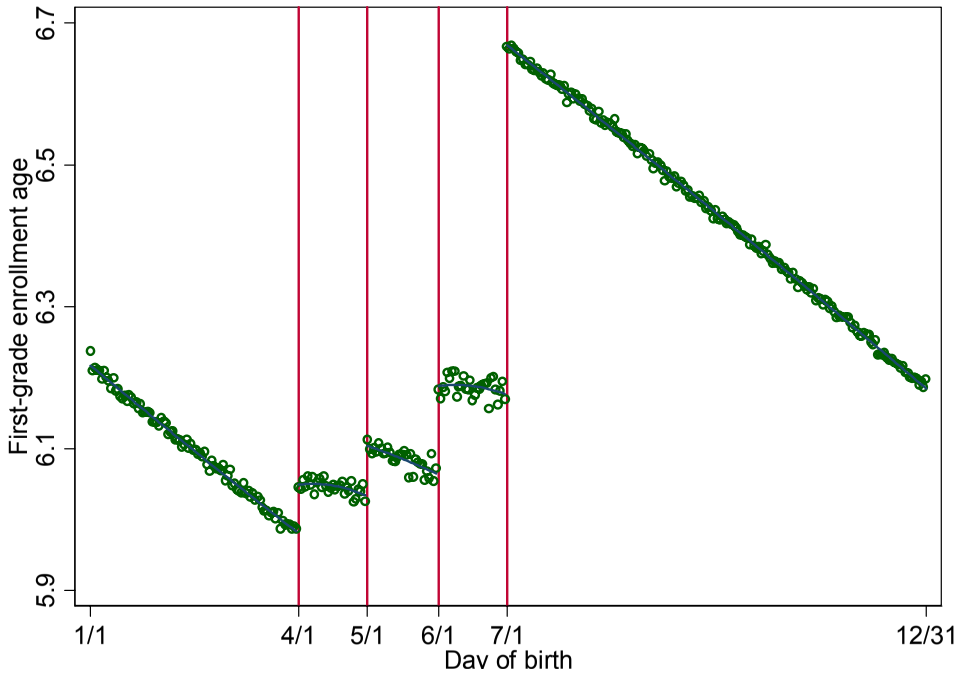
12/31
Day of birth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6.7
1/1
4/1
5/1
6/1
7/1
12/31
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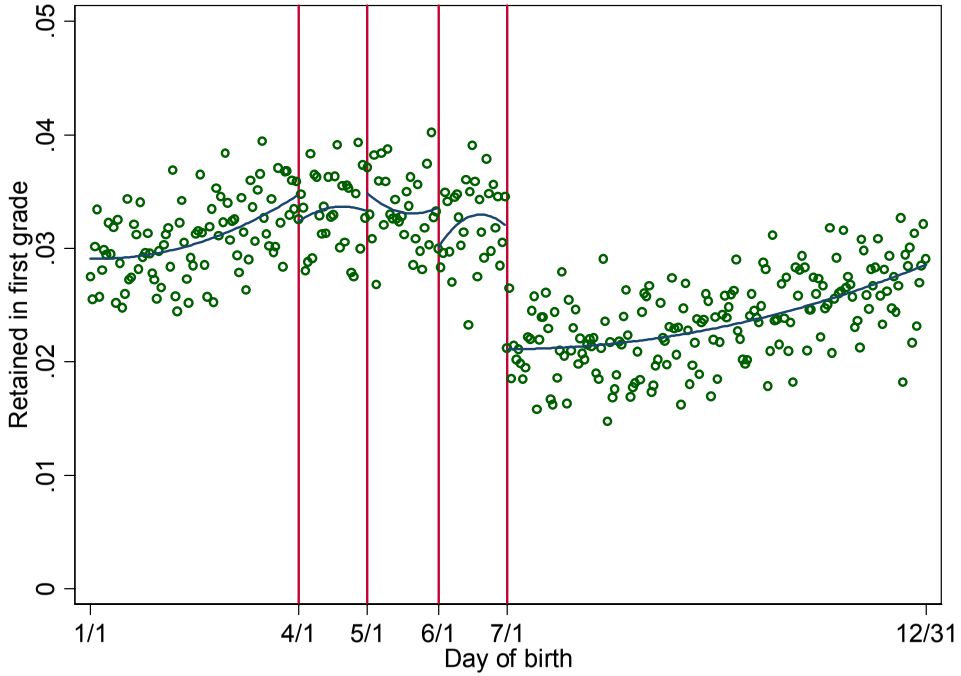
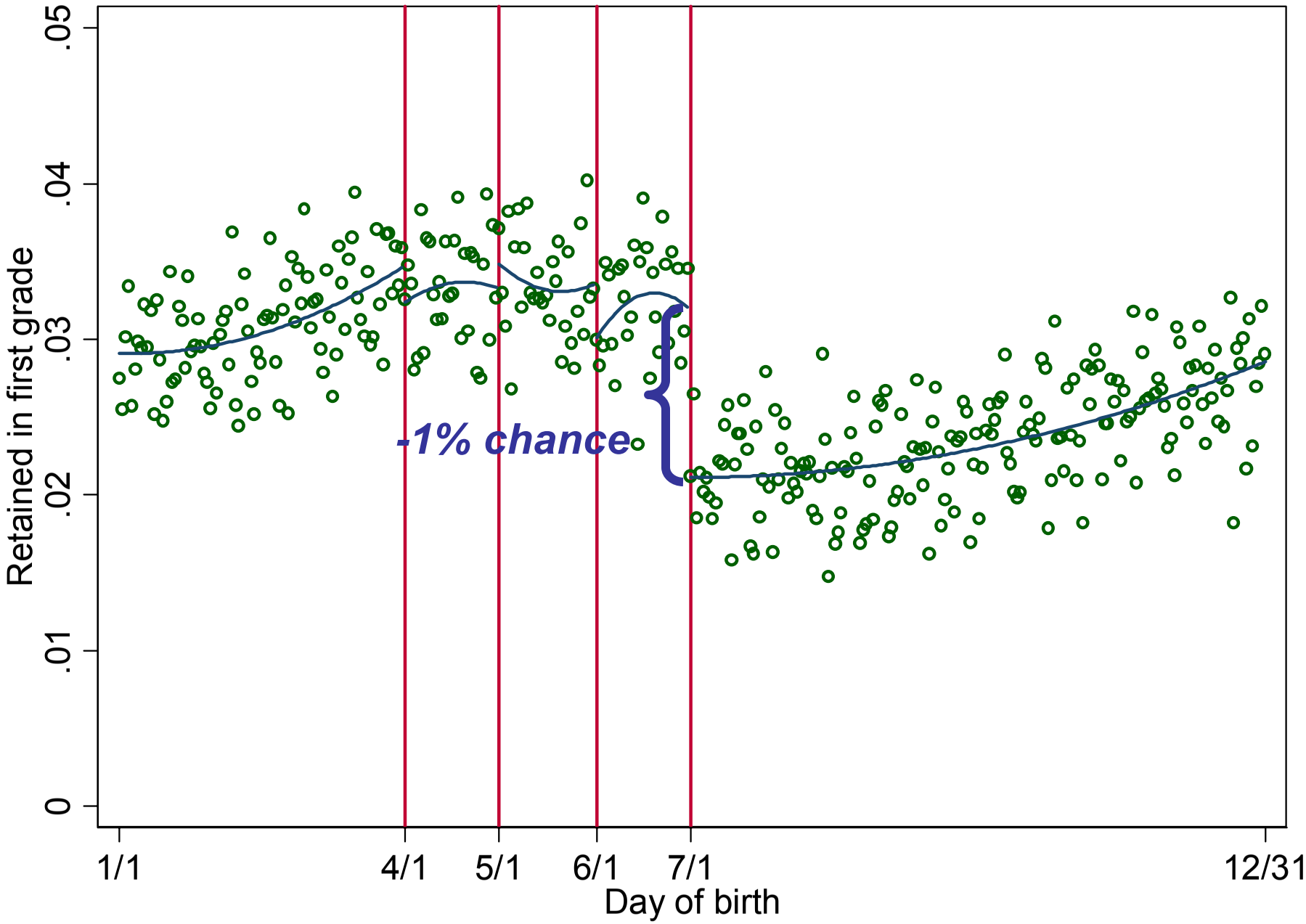

Retained in first grade
0
.01
.02
.03
.04
.05
1/1
4/1
5/1
6/1
7/1
12/31
Day of birth


Retained in first grade
0
.01
.02
.03
.04
.05
-1% chance
1/1
4/1
5/1
6/1
7/1
12/31
Day of birth

- For next time: Finish readings on education

Whiteboard #1

Whiteboard #2

Whiteboard #3

Whiteboard #4

Whiteboard #5


Map of Africa
TUNISIA
Mediterranean Sea
MOROCCO
IRAQ
IRAN
Canary Islands (SPAIN)
ALGERIA
LIBYA
EGYPT
Persian Gulf
WESTERN SAHARA
SAUDI ARABIA
MAURITANIA
MALI
NIGER
Red Sea
ERITREA
CHAD
Lake Chad
SENEGAL
GAMBIA
BURKINA
GUINEA BISSAU
GUINEA
SUDAN
DJIBOUTI
SOMALIA
GHANA
BENIN
TOGO
NIGERIA
SIERRA LEONE
IVORY COAST
Lake Volta
ETHIOPIA
LIBERIA
CENTRAL AFRICAN REPUBLIC
CAMEROON
Lake Rudolf
EQUATORIAL GUINEA
UGANDA
KENYA
SAO TOME & PRINCIPE
GABON
CONGO
ZAIRE
RWANDA
Lake Victoria
BURUNDI
Lake Tanganyika
TANZANIA
ANGOLA (Cabinda)
MALAWI
Lake Nyasa
ANGOLA
ZAMBIA
Lake Kariba
MOZAMBIQUE
MADAGASCAR
ZIMBABWE
NAMIBIA
BOTSWANA
SOUTH AFRICA (Walvis Bay)
SWAZILAND
LESOTHO
SOUTH AFRICA

Map of Africa