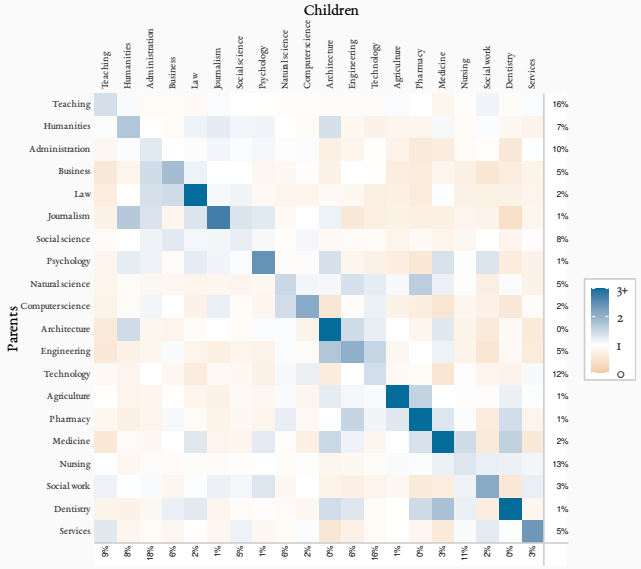
Intergenerational correlations by fields of study



Inheritance of fields of study

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Motivation

- Years of schooling and field choice, strongly correlated across generations
- Sociology: Micro-class inheritance drives reproduction of advantage[1]
- Occupational inheritance: tertiary degrees required for many occupations
- Causal estimates separate parental from external influence

[1] Jonsson et al. (2009) and Weeden and Grusky (2005)

This paper

- Estimating **causal effect** of parent field enrollment on child field choice
  - RDD: comparing parents with same prefernces, above/below treshold
  - LATE: studying parents who comply with assignment
- Results:
  - 2.1p.p. (52%) increased likelihood to earn degree in parent's field
  - Strongest significant effect for: technology, engineering, medicine, business.
  - No subject-specific skill transfer, little effect on returns.
  - Parental academic and occupational experience important.
  - Both sons and daughters follow parent of same gender more often.

Swedish tertiary education

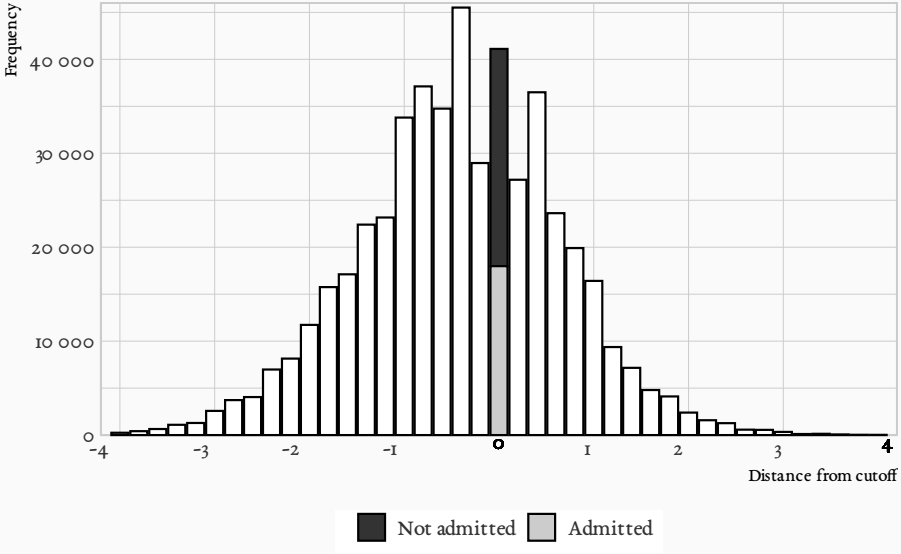
- Tuition-free, public. Students get stipends and subsidized loans.
- Centralized application, universal from 2005
- Application by ordered lists of max 12 institution-program combinations
- Admission by *admission group* score (GPA, SAT, adult education)
- Truncated multicategory serial dictatorship[2]

[2] Not strategy proof, but minimally manipulable. (Balinski and Sönmez 1999; Pathak and Sönmez 2013).

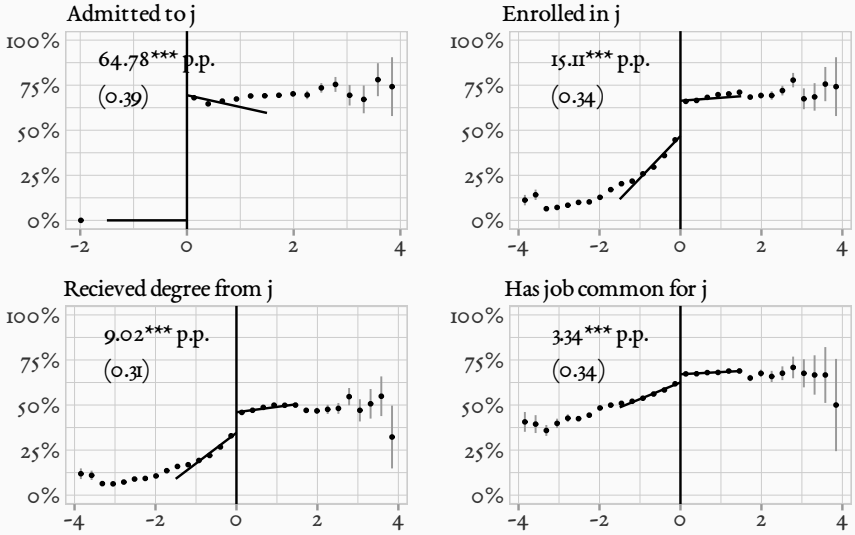
Data processing

- Parent applications (1977–1992)
  - Collapsed by admission groups, fields
  - Dominated alternatives removed
  - Pairs of target j and next-best k field
  - Possibly multiple pairs per applicant
- Matched to parent enrollment (5 years), degree completion (10 years) in j
- Child outcomes: application, enrollment, degree completion in j (1977-2021)
- Sample: all applicants, also non-parents (outcome=0)

Score distribution



First stage


Admitted to j
64.78*** p.p.
(0.39)
Enrolled in j
15.11*** p.p.
(0.34)
Recieved degree from j
9.02*** p.p.
(0.31)
Has job common for j
3.34*** p.p.
(0.34)
100%
75%
50%
25%
0%
−4
−2
0
2
4

Reduced form

$$\text{Child follows to } j_{pcj} = \alpha 1\left[a_{p\tau} \geq 0\right] + f\left(a_{p\tau}; \theta^g\right) + X_p\gamma + \mu_\tau + \kappa_k + \varepsilon_{pcj} \tag{1}$$

- score a, parent p, child c, field j, k, admission group g, cutoff τ
- Linear polynomial for each admission group:
  $f\left(a_{p\tau}; \theta^g\right) = \theta_0^g a_{p\tau} + \theta_1^g a_{p\tau} 1\left[a_{p\tau} \geq 0\right]$
- Cutoff fixed effects μ_τ, next-best field f.e. κ_k, f.e. for applicant age, gender, and prio rank (in X_p)

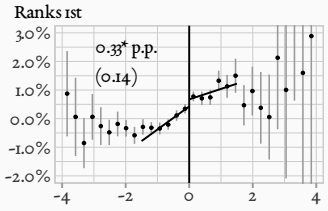
Fuzzy RDD estimation

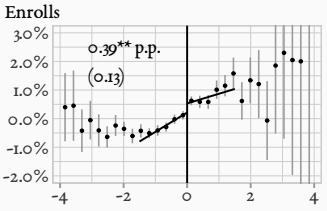
$$\text{Child follows } j_{pcj} = \beta \text{Parent enrolls } j_{pj} + f\left(a_{p\tau}; \psi^g\right) + X_p\lambda + v_\tau + \xi_k + \upsilon_{pcj} \quad (2)$$

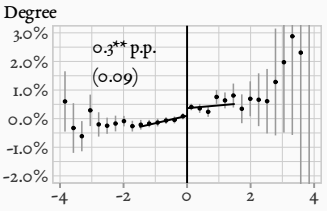
$$\text{Parent enrolls } j_{pj} = \pi 1\left[a_{pjg} \geq 0\right] + f\left(a_{p\tau}; \phi^g\right) + X_p\delta + \eta_\tau + \chi_k + u_{pj} \quad (3)$$

	Separately estimated	Joint model
Parent female	0.001	0.001
	(0.001)	(0.001)
Parent age	–0.001†	–0.001†
	(0.000)	(0.000)
Parent born outside of Sweden	0.002	0.005
	(0.003)	(0.005)
Grandfather's age at parent's birth	0.000	0.000
	(0.000)	(0.000)
Grandmother's age at parent's birth	0.000	0.000
	(0.000)	(0.000)
Both grandparents born outside of Sweden	–0.001	–0.004
	(0.002)	(0.004)
Grandparent earnings pt	0.002	0.001
	(0.003)	(0.003)
Uni. educated grandparents	0.001	0.002
	(0.001)	(0.001)
Grandparent degree in j	0.000	–0.001
	(0.002)	(0.002)
Cognitive skills	0.001	
	(0.001)	
Non-cognitive skills	–0.001	
	(0.001)	
Observations		826 185
Wald statistic		0.933
		[p=0.495]

Main results — reduced form







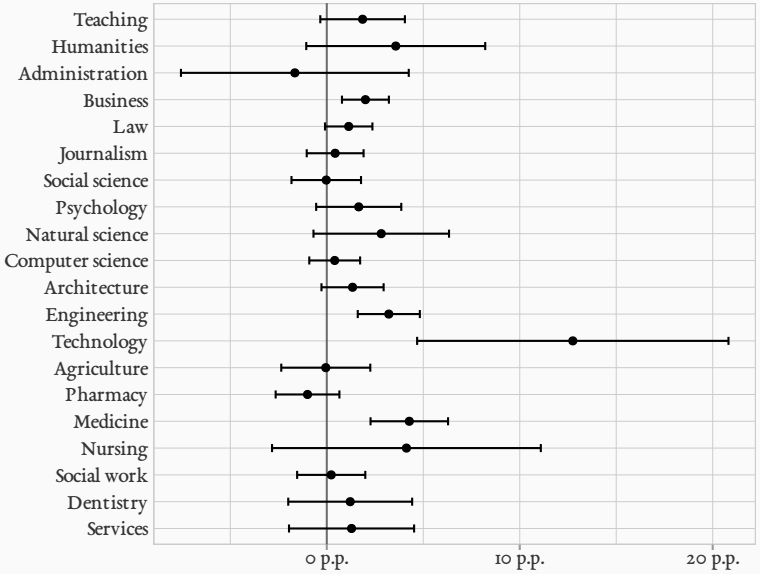
Data demeaned for each cutoff, here with only two polynomials.

Main results

	Broad fields			Narrow fields		
	Ranks 1st	Enrolls	Earns degree	Ranks 1st	Enrolls	Earns degree
Parent above cutoff to *j*	0.33*	0.39**	0.30**	0.34**	0.33***	0.16*
	(0.14)	(0.13)	(0.09)	(0.11)	(0.09)	(0.06)
Parent enrolls in *j*	2.27*	2.68**	2.08**	1.96**	1.85***	0.89**
	(0.98)	(0.86)	(0.64)	(0.60)	(0.49)	(0.34)
Parent receives degree in *j*	3.68*	4.34**	3.36**	3.18***	3.00***	1.44**
	(1.59)	(1.39)	(1.04)	(0.97)	(0.80)	(0.56)
Observations	840 926	840 926	840 926	858 503	858 503	858 503
Control group mean	10.35%	7.85%	3.97%	5.8%	3.7%	1.65%
Bandwidth	1.5	1.5	1.5	1.5	1.5	1.5
1st stage Wald (enrolls)	1709	1709	1709	2301	2301	2301
1st stage Wald (degree)	744	744	744	1046	1046	1046

Notes: All models use triangular kernels and include cutoff fixed effects and linear polynomials of the running variables (estimated separately above and below the cutoff) for each admission group, as well as controls for the age and gender of the applicant and fixed-effects for the next-best alternative. Standard errors are clustered at the cutoff and parent level.

† $p \leq 0.1$, * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$.



Compared to correlations

Field	Relative popularity	Effect estimate		Control group mean	Relative effect
Teaching	140%	1.86p.p.†	(1.12)	5.99%	31%
Humanities	173%	3.57p.p.	(2.37)	6.58%	54%
Administration	128%	−1.65p.p.	(3.01)	13.56%	−12%
Business	186%	2.00p.p.**	(0.62)	3.97%	50%
Law	343%	1.14p.p.†	(0.63)	1.08%	105%
Journalism	272%	0.43p.p.	(0.75)	1.21%	36%
Social science	122%	−0.03p.p.	(0.92)	2.14%	−1%
Psychology	244%	1.66p.p.	(1.13)	1.32%	125%
Natural science	151%	2.82p.p.	(1.79)	3.61%	78%
Computer science	212%	0.41p.p.	(0.67)	1.34%	31%
Architecture	729%	1.34p.p.	(0.82)	0.55%	245%
Engineering	207%	3.21p.p.***	(0.82)	3.30%	98%
Technology	143%	12.75p.p.**	(4.12)	9.10%	140%
Agriculture	554%	−0.05p.p.	(1.18)	2.53%	−2%
Pharmacy	612%	−1.00p.p.	(0.84)	0.48%	−209%
Medicine	354%	4.28p.p.***	(1.02)	4.39%	97%
Nursing	132%	4.13p.p.	(3.55)	8.70%	47%
Social work	211%	0.23p.p.	(0.90)	1.81%	13%
Dentistry	734%	1.21p.p.	(1.64)	1.17%	104%
Services	236%	1.28p.p.	(1.65)	2.10%	61%
Aggregate	164%	2.08p.p.**	(0.64)	3.97%	52%

Children
Teaching
Humanities
Administration
Business
Law
Journalism
Social science
Psychology
Natural science
Computer science
Architecture
Engineering
Technology
Agriculture
Pharmacy
Medicine
Nursing
Social work
Dentistry
Services
Parents
0.03+
0
0.03-

The results are robust to:

- Including unique slopes per cutoff and next-best option f.e. ⇒
- Any bandwidth choice ⇒
- Placebo: child⇒parent effect ⇒
- Holding institution constant ⇒
- Moving the cutoffs ⇒
- Including only top-ranked options ⇒
- Donut estimation ⇒
- Quadratic polynomials ⇒

Mechanisms

- Human capital transfers
- Experience of parent: occupation/education
- Child earnings
- Gender composition

Enrollment and subject-specific elementary school GPA

Field	Math		Science/technology		Social science		Languages	
Teaching	0.16*	(0.07)	0.10	(0.06)	0.14*	(0.06)	0.08	(0.06)
Humanities	0.15	(0.15)	0.24†	(0.15)	0.37*	(0.14)	0.30*	(0.13)
Administration	0.00	(0.12)	0.02	(0.11)	0.08	(0.10)	0.06	(0.10)
Business	0.01	(0.04)	−0.01	(0.04)	0.02	(0.04)	−0.01	(0.04)
Law	−0.09	(0.07)	−0.01	(0.07)	0.06	(0.07)	0.00	(0.06)
Journalism	0.20**	(0.07)	0.12†	(0.07)	0.21**	(0.07)	0.18**	(0.06)
Social science	0.11	(0.09)	0.22**	(0.09)	0.19*	(0.08)	0.13†	(0.08)
Psychology	−0.10	(0.11)	0.03	(0.09)	0.00	(0.09)	−0.01	(0.09)
Natural science	0.28*	(0.12)	0.30*	(0.12)	0.34**	(0.11)	0.37***	(0.10)
Computer science	0.03	(0.07)	0.01	(0.07)	0.04	(0.06)	0.11†	(0.06)
Architecture	0.14†	(0.07)	0.10	(0.07)	0.19**	(0.07)	0.15*	(0.07)
Engineering	0.12*	(0.06)	0.09†	(0.05)	0.08	(0.05)	0.01	(0.05)
Technology	0.42*	(0.20)	0.42*	(0.18)	0.30†	(0.18)	0.29	(0.18)
Agriculture	−0.05	(0.09)	−0.12	(0.09)	−0.08	(0.08)	−0.11	(0.08)
Pharmacy	0.18	(0.18)	−0.02	(0.16)	0.02	(0.16)	0.03	(0.16)
Medicine	−0.07	(0.07)	−0.06	(0.06)	−0.09	(0.05)	−0.03	(0.05)
Nursing	0.27	(0.19)	0.00	(0.16)	0.24	(0.16)	0.29†	(0.15)
Social work	−0.12	(0.08)	−0.16*	(0.07)	−0.03	(0.07)	0.00	(0.07)
Dentistry	−0.48*	(0.23)	−0.30	(0.19)	−0.22	(0.19)	−0.37*	(0.18)
Services	0.11	(0.15)	0.06	(0.12)	0.15	(0.12)	0.26*	(0.12)
Aggregate	0.07	(0.04)	0.05	(0.04)	0.08*	(0.04)	0.06†	(0.04)

† $p \leq 0.1$, * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$.

Predicted earnings percentile

	Broad fields			Narrow fields		
	Ranks 1st	Enrolls	Earns degree	Ranks 1st	Enrolls	Earns degree
Parent enrolls in *j*	−3.02	−1.72	−0.67	−5.06**	−3.94**	−3.23***
	(2.99)	(2.70)	(2.04)	(1.69)	(1.40)	(0.94)
× Predicted earnings (10-14 years, pt.)	6.63†	5.89†	4.04†	9.70***	8.10***	5.75***
	(3.47)	(3.17)	(2.36)	(2.01)	(1.69)	(1.12)
Predicted earnings (10-14 years, pt.)	18.87***	17.03***	7.58***	12.71***	10.73***	3.11**
	(2.65)	(2.39)	(1.68)	(1.94)	(1.59)	(1.06)
Observations	770 533	770 533	770 533	789 177	789 177	789 177
Control group mean	10.3%	7.86%	3.91%	5.77%	3.72%	1.61%
Bandwidth	1.5	1.5	1.5	1.5	1.5	1.5
1st stage Wald	539	539	539	760	760	760

Notes: Predicted earnings is the cohort percentile of average earnings 10–14 years after graduation, predicted based on pre-treatment individual characteristics. Predicted earnings below Xth percentile (sample min=X) yield negative treatment effect on degree completion.

† $p \leq 0.1$, * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$.

Average GPA among enrolled

	Broad fields			Narrow fields		
	Ranks 1st	Enrolls	Earns degree	Ranks 1st	Enrolls	Earns degree
Parent enrolls in j	−0.05	1.55	2.20†	−0.47	0.06	−0.52
	(1.69)	(1.51)	(1.21)	(1.01)	(0.83)	(0.58)
× Avg. GPA among enrolled	2.72*	1.32	−0.15	2.75***	2.02***	1.59***
	(1.13)	(1.00)	(0.82)	(0.73)	(0.59)	(0.42)
Observations	840 926	840 926	840 926	858 503	858 503	858 503
Control group mean	10.35%	7.85%	3.97%	5.8%	3.7%	1.65%
Bandwidth	1.5	1.5	1.5	1.5	1.5	1.5
1st stage Wald	1027	1027	1027	1432	1432	1432

Notes: High school GPA in standard deviations centered at zero (range X to Y).
† $p \leq 0.1$, * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$.

Field	Correlations: Parent with degree in field				Returns (earnings pt) to enrolling in field			
	Graduation rate among enrollees		Earnings (pt) among graduates		RDD sample of field applicants (bw = 1.5)			
					Enrolled		× parent degree	
Teaching	10.74***	(0.34)	0.35†	(0.20)	−4.82	(3.16)	−0.48	(3.09)
Humanities	11.37***	(0.28)	−1.02***	(0.25)	0.36	(3.71)	9.09	(8.35)
Administration	1.80***	(0.36)	−0.99***	(0.26)	10.25†	(5.31)	7.93	(14.26)
Business	4.40***	(0.57)	1.86***	(0.37)	0.24	(1.48)	2.42	(2.23)
Law	3.22***	(0.88)	3.20***	(0.55)	4.48**	(1.47)	4.21	(2.84)
Journalism	2.52	(3.19)	−1.90	(1.97)	9.94***	(2.32)	−7.50	(10.51)
Social science	−1.65*	(0.73)	1.34***	(0.34)	1.21	(2.11)	2.49	(2.75)
Psychology	5.93***	(1.72)	−1.66†	(0.99)	2.20	(2.82)	15.23*	(7.11)
Natural science	6.46***	(0.38)	−0.83*	(0.38)	−14.45**	(5.15)	8.70	(7.47)
Computer science	1.24	(1.99)	0.98	(1.41)	1.58	(2.16)	17.66*	(8.34)
Architecture	15.29***	(2.17)	0.44	(1.53)	−1.19	(2.29)	−3.33	(7.76)
Engineering	5.84***	(0.40)	1.32***	(0.26)	3.43*	(1.56)	−0.27	(2.25)
Technology	6.52***	(0.45)	0.51*	(0.23)	10.34*	(5.08)	−12.24†	(6.46)
Agriculture	10.92***	(1.19)	6.50***	(0.78)	4.37	(3.14)	7.45	(5.89)
Pharmacy	7.11***	(1.99)	−0.69	(1.46)	7.92	(6.02)	4.44	(13.62)
Medicine	2.16***	(0.46)	2.42***	(0.43)	15.98***	(1.65)	2.78	(2.83)
Nursing	7.59***	(0.36)	−2.50***	(0.21)	−13.97***	(2.79)	7.91**	(2.78)
Social work	2.63**	(0.92)	1.77***	(0.47)	1.29	(2.13)	0.28	(3.20)
Dentistry	8.28***	(1.59)	4.46***	(1.21)	9.36	(7.93)	1.02	(16.23)
Services	16.33***	(1.05)	9.98***	(0.36)	−1.47	(3.93)	5.81	(9.61)
Aggregate	7.07***	(0.12)	0.46***	(0.08)	3.07**	(1.08)	0.20	(0.82)

† $p \leq 0.1$, * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$.

Parent occupation (mediation)

	Broad fields			Narrow fields		
	Ranks 1st	Enrolls	Earns degree	Ranks 1st	Enrolls	Earns degree
Parent enrolls in *j*	0.61	1.39	1.21	1.61†	1.52*	0.45
	(1.40)	(1.24)	(0.91)	(0.86)	(0.70)	(0.48)
× Parent has job common for *j*	1.67*	2.40**	1.72**	0.51	0.97*	0.88**
	(0.81)	(0.74)	(0.52)	(0.55)	(0.44)	(0.29)
Parent has job common for *j*	2.16***	0.69	0.13	1.60***	0.63**	0.19
	(0.54)	(0.48)	(0.35)	(0.29)	(0.24)	(0.16)
Observations	650 733	650 733	650 733	666 688	666 688	666 688
Control group mean	11.67%	8.9%	4.42%	6.54%	4.22%	1.82%
Bandwidth	1.5	1.5	1.5	1.5	1.5	1.5
1st stage Wald	3538	3538	3538	3631	3631	3631

† $p \leq 0.1$, * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$.

Parent experience

- No subject-specific human capital transmission,
- but parent experience matters.
- Parent occupation is important, but following has little effect on earnings.

Gender composition (levels)

Field	Father - Son		Father - Daughter		Mother - Son		Mother - Daughter	
Teaching	0.43	(1.66)	1.93	(2.26)	1.06	(1.37)	3.78*	(1.86)
Humanities	10.83*	(4.99)	5.23	(5.87)	0.53	(3.69)	6.45	(4.16)
Administration	−1.04	(5.55)	2.02	(5.96)	−5.58	(4.77)	−5.29	(5.53)
Business	3.37***	(1.01)	0.72	(0.98)	2.51*	(0.98)	2.87*	(1.17)
Law	1.05	(0.99)	1.91†	(1.16)	−0.07	(0.84)	2.35*	(1.00)
Journalism	−1.47	(1.19)	3.80	(2.56)	0.39	(0.79)	0.09	(1.45)
Social science	−1.93	(1.89)	0.91	(2.28)	−0.39	(1.33)	1.48	(1.71)
Psychology	−1.56	(2.08)	−0.75	(2.35)	2.12	(1.61)	3.88†	(2.28)
Natural science	2.65	(2.73)	3.50	(2.39)	5.22	(4.05)	1.67	(3.66)
Computer science	2.11†	(1.16)	−0.50	(0.89)	−0.35	(1.39)	0.62	(1.25)
Architecture	0.00	(1.46)	3.72*	(1.88)	1.69	(1.19)	0.93	(1.14)
Engineering	4.06**	(1.26)	2.51*	(1.07)	5.73***	(1.49)	3.23*	(1.39)
Technology	16.08*	(6.39)	14.09**	(4.93)	18.39†	(9.85)	1.30	(8.76)
Agriculture	−0.03	(2.34)	−0.15	(2.65)	−0.71	(1.70)	0.72	(2.17)
Pharmacy	−5.05†	(2.84)	4.58	(4.37)	−1.18	(0.81)	−1.72	(1.48)
Medicine	2.52	(1.98)	5.63**	(1.91)	4.69**	(1.64)	5.57**	(2.02)
Nursing	7.30	(7.70)	18.12	(12.22)	1.05	(4.48)	0.22	(6.84)
Social work	−1.63	(1.46)	1.93	(2.61)	0.03	(0.92)	0.81	(1.63)
Dentistry	6.95*	(3.13)	6.94	(5.48)	−3.43	(2.11)	−5.98†	(3.41)
Services	8.18	(4.99)	−2.48	(4.46)	2.95	(2.91)	0.10	(2.19)
Aggregate	3.13***	(0.80)	1.58*	(0.78)	1.76*	(0.78)	2.72**	(0.87)

Family

- Larger effects for same-gender parent-child pairs
- Also:
  - Small differences by education level of grand parents ⇒
  - Weak effect for retired parents ⇒
  - Assortative mating important, but not gendered ⇒

Conclusion

- Large, robust, aggregate effect, substantial heterogeneity (technology 12.75p.p., Pharmacy -1.0p.p.), pattern different from correlations
- Mechanism: parent as role models/field saliency:
  - No field-specific human capital transmission
  - Parent experience matters, STEM, competetive, high-earning choices followed
  - Weak effects on earnings
  - Children more likely to follow parent of same gender

Thanks!

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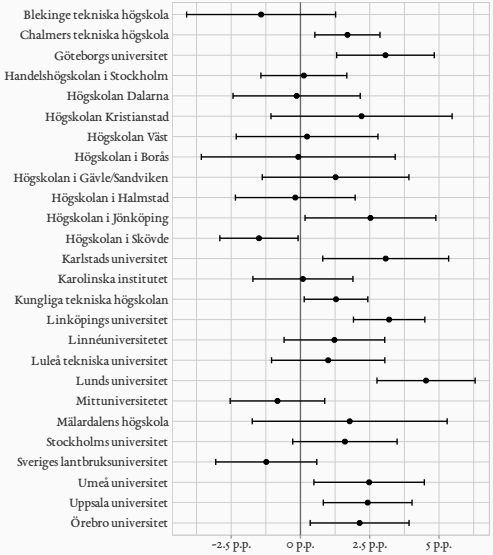
Appendix


Blekinge tekniska högskola
Chalmers tekniska högskola
Göteborgs universitet
Handelshögskolan i Stockholm
Högskolan Dalarna
Högskolan Kristianstad
Högskolan Väst
Högskolan i Borås
Högskolan i Gävle/Sandviken
Högskolan i Halmstad
Högskolan i Jönköping
Högskolan i Skövde
Karlstads universitet
Karolinska institutet
Kungliga tekniska högskolan
Linköpings universitet
Linnéuniversitetet
Luleå tekniska universitet
Lunds universitet
Mittuniversitetet
Mälardalens högskola
Stockholms universitet
Sveriges lantbruksuniversitet
Umeå universitet
Uppsala universitet
Örebro universitet
-2.5 p.p.
0 p.p.
2.5 p.p.
5 p.p.

Additional results

			Interactions					
Field	Earns degree		× Daughter		× Mother		× Mother × Daughter	
Teaching	0.43	(1.66)	1.50	(2.38)	0.63	(1.85)	1.22	(2.88)
Humanities	10.83*	(4.99)	−5.61	(6.61)	−10.30†	(5.82)	11.53	(8.42)
Administration	−1.04	(5.55)	3.06	(7.69)	−4.54	(6.85)	−2.77	(9.70)
Business	3.37***	(1.01)	−2.65*	(1.25)	−0.85	(1.25)	3.01†	(1.73)
Law	1.05	(0.99)	0.85	(1.27)	−1.12	(1.06)	1.56	(1.58)
Journalism	−1.47	(1.19)	5.27*	(2.29)	1.87	(1.26)	−5.57*	(2.69)
Social science	−1.93	(1.89)	2.84	(2.68)	1.54	(2.15)	−0.97	(3.23)
Psychology	−1.56	(2.08)	0.81	(3.02)	3.69	(2.52)	0.94	(3.97)
Natural science	2.65	(2.73)	0.86	(2.91)	2.58	(4.21)	−4.41	(5.16)
Computer science	2.11†	(1.16)	−2.61*	(1.25)	−2.46	(1.63)	3.58†	(1.91)
Architecture	0.00	(1.46)	3.71†	(2.23)	1.69	(1.60)	−4.48†	(2.42)
Engineering	4.06**	(1.26)	−1.55	(1.10)	1.68	(1.57)	−0.95	(2.00)
Technology	16.08*	(6.39)	−1.99	(5.43)	2.31	(10.13)	−15.10	(11.13)
Agriculture	−0.03	(2.34)	−0.12	(3.41)	−0.68	(2.23)	1.55	(3.98)
Pharmacy	−5.05†	(2.84)	9.63†	(5.73)	3.87	(2.79)	−10.17†	(5.91)
Medicine	2.52	(1.98)	3.11	(2.55)	2.16	(2.47)	−2.22	(3.40)
Nursing	7.30	(7.70)	10.83	(12.96)	−6.25	(8.53)	−11.66	(14.76)
Social work	−1.63	(1.46)	3.56	(2.72)	1.66	(1.47)	−2.78	(3.19)
Dentistry	6.95*	(3.13)	−0.01	(5.94)	−10.37**	(3.45)	−2.54	(6.25)
Services	8.18	(4.99)	−10.66†	(6.08)	−5.23	(5.45)	7.81	(6.94)
Aggregate	3.13***	(0.80)	−1.55**	(0.56)	−1.37*	(0.57)	2.51**	(0.78)

Back

Transmission by education level of grandparents

	Broad fields			Narrow fields		
	Ranks 1st	Enrolls	Earns degree	Ranks 1st	Enrolls	Earns degree
Parent enrolls in *j*	1.21	2.13*	2.05*	1.46†	1.62**	0.71
	(1.23)	(1.07)	(0.83)	(0.76)	(0.62)	(0.46)
× Grandparent high school	0.68	−0.06	−0.16	0.24	−0.21	−0.03
	(0.90)	(0.80)	(0.62)	(0.60)	(0.48)	(0.36)
× Grandparent post-secondary	1.04	0.88	−0.68	0.42	0.47	0.30
	(1.10)	(0.97)	(0.72)	(0.75)	(0.60)	(0.42)
× Grandparent tertiary	1.74†	1.21	0.48	0.78	0.55	0.39
	(0.94)	(0.83)	(0.63)	(0.63)	(0.51)	(0.37)
Grandparent high school	−0.02	0.17	0.08	0.02	0.18	0.05
	(0.43)	(0.38)	(0.30)	(0.27)	(0.21)	(0.16)
Grandparent post-secondary	−0.22	−0.25	0.24	−0.01	−0.18	−0.13
	(0.53)	(0.47)	(0.35)	(0.34)	(0.27)	(0.19)
Grandparent tertiary	−0.35	−0.22	−0.23	−0.08	−0.07	−0.19
	(0.46)	(0.41)	(0.31)	(0.29)	(0.23)	(0.17)
Observations	840 926	840 926	840 926	858 503	858 503	858 503
Control group mean	10.35%	7.85%	3.97%	5.8%	3.7%	1.65%
Bandwidth	1.5	1.5	1.5	1.5	1.5	1.5
1st stage Wald	235	235	235	294	294	294

† $p \leq 0.1$, * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$.

Back

Transmission by parent age

	Broad fields			Narrow fields		
	Ranks 1st	Enrolls	Earns degree	Ranks 1st	Enrolls	Earns degree
Parent enrolls in *j*	2.12	5.80	3.86	3.86	2.84	6.59*
	(6.37)	(5.80)	(5.07)	(3.93)	(3.01)	(2.68)
× Parent age 41–50	4.84	2.48	3.37	0.85	1.88	−3.72
	(6.27)	(5.72)	(4.97)	(3.87)	(2.95)	(2.64)
× Parent age 51–64	3.01	−1.25	−1.51	0.34	0.66	−5.26*
	(6.26)	(5.71)	(4.95)	(3.87)	(2.95)	(2.62)
× Parent age 65+	−9.83	−16.27*	−8.72	−8.62	−7.30†	−7.77**
	(8.70)	(7.70)	(6.50)	(5.75)	(4.10)	(2.94)
Parent age 41–50	−3.43	−2.47	−3.00	0.39	0.96	2.37*
	(3.17)	(2.88)	(2.51)	(1.83)	(1.36)	(1.14)
Parent age 51–64	−7.49*	−6.20*	−6.41*	−1.33	−0.55	−0.50
	(3.17)	(2.88)	(2.50)	(1.83)	(1.37)	(1.13)
Parent age 65+	−6.43	−2.22	−5.69	−0.22	1.35	−3.10*
	(5.18)	(4.54)	(3.79)	(3.40)	(2.33)	(1.44)
Observations	454 339	454 339	454 339	464 609	464 609	464 609
Control group mean	19.38%	14.64%	7.33%	10.84%	6.9%	3.05%
Bandwidth	1.5	1.5	1.5	1.5	1.5	1.5
1st stage Wald	200	200	200	254	254	254

† $p \leq 0.1$, * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$.

◂ Back

Assortative mating (first stage)

	Broad fields	Narrow fields
	Other parent has degree in *j*	Other parent has degree in *j*
Parent enrolls in *j*	5.95***	5.58***
	(1.56)	(1.03)
× Parent female	8.32***	5.80***
	(1.04)	(0.79)
Parent female	−2.75***	−0.90*
	(0.52)	(0.36)
Observations	840 926	858 503
Control group mean	10.31%	6.18%
Bandwidth	1.5	1.5
1st stage Wald		947

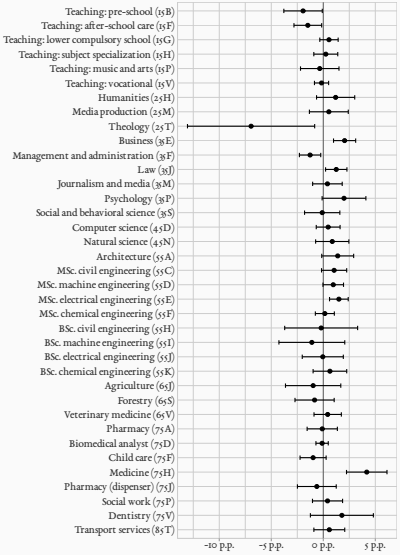
† $p \leq 0.1$, * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$.

Back

Assortative mating (post-treatment)

	Broad fields			Narrow fields		
	Ranks 1st	Enrolls	Earns degree	Ranks 1st	Enrolls	Earns degree
Parent enrolls in *j*	1.19	1.44	1.71**	1.76**	1.60**	0.79*
	(0.99)	(0.88)	(0.63)	(0.61)	(0.51)	(0.34)
× Parent female	−0.65	−0.34	−0.60	−1.00*	−0.73*	−0.44†
	(0.63)	(0.57)	(0.41)	(0.42)	(0.35)	(0.24)
× Other parent has degree in *j*	5.22*	7.54***	3.22*	2.03	3.53*	1.33
	(2.06)	(1.85)	(1.37)	(2.11)	(1.78)	(1.30)
× Parent female × other parent has degree in *j*	1.12	−0.46	1.08	−1.30	−1.81	1.15
	(2.79)	(2.52)	(1.86)	(2.96)	(2.45)	(1.76)
Parent female	1.47***	1.34***	0.78***	0.79***	0.59***	0.36***
	(0.30)	(0.26)	(0.18)	(0.19)	(0.15)	(0.10)
Other parent has degree in *j*	3.41*	0.27	0.01	4.40**	1.67	0.85
	(1.58)	(1.41)	(1.05)	(1.69)	(1.42)	(1.04)
Parent female × other parent has degree in *j*	1.25	2.24	0.49	3.05	2.97	0.06
	(2.02)	(1.82)	(1.35)	(2.29)	(1.90)	(1.36)
Observations	840 926	840 926	840 926	858 503	858 503	858 503
Control group mean	10.35%	7.85%	3.97%	5.8%	3.7%	1.65%
Bandwidth	1.5	1.5	1.5	1.5	1.5	1.5
1st stage Wald	996	996	996	1360	1360	1360

† $p \leq 0.1$, * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$.


Teaching: pre-school (15B)
Teaching: after-school care (15F)
Teaching: lower compulsory school (15G)
Teaching: subject specialization (15H)
Teaching: music and arts (15P)
Teaching: vocational (15V)
Humanities (25H)
Media production (25M)
Theology (25T)
Business (38E)
Management and administration (38F)
Law (38J)
Journalism and media (38M)
Psychology (38P)
Social and behavioral science (38S)
Computer science (45D)
Natural science (45N)
Architecture (55A)
MSc. civil engineering (55C)
MSc. machine engineering (55D)
MSc. electrical engineering (55E)
MSc. chemical engineering (55F)
BSc. civil engineering (55H)
BSc. machine engineering (55I)
BSc. electrical engineering (55J)
BSc. chemical engineering (55K)
Agriculture (65J)
Forestry (65S)
Veterinary medicine (65V)
Pharmacy (75A)
Biomedical analyst (75D)
Child care (75F)
Medicine (75H)
Pharmacy (dispenser) (75J)
Social work (75P)
Dentistry (75V)
Transport services (85T)
−10 p.p.
−5 p.p.
0 p.p.
5 p.p.

Varying slopes

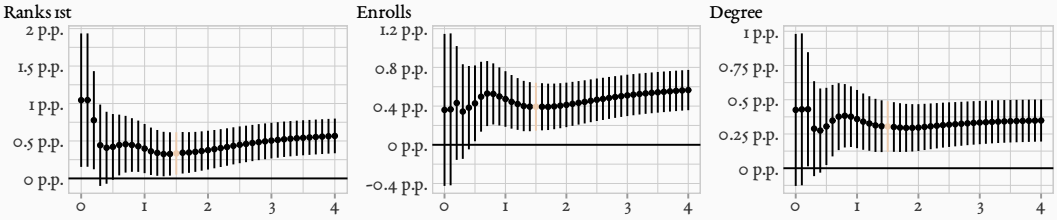
	Broad fields			Narrow fields		
	Ranks 1st	Enrolls	Earns degree	Ranks 1st	Enrolls	Earns degree
Parent above cutoff to *j*	0.38*	0.45**	0.31**	0.35**	0.29**	0.12†
	(0.17)	(0.15)	(0.11)	(0.12)	(0.10)	(0.07)
Parent enrolls in *j*	2.71*	3.20**	2.25**	2.06**	1.70**	0.73†
	(1.21)	(1.06)	(0.79)	(0.72)	(0.60)	(0.42)
Parent receives degree in *j*	4.34*	5.13**	3.60**	3.36**	2.77**	1.18†
	(1.94)	(1.70)	(1.26)	(1.18)	(0.98)	(0.68)
Observations	840 926	840 926	840 926	858 503	858 503	858 503
Control group mean	10.35%	7.85%	3.97%	5.8%	3.7%	1.65%
Bandwidth	1.5	1.5	1.5	1.5	1.5	1.5
1st stage Wald (enrolls)	1207	1207	1207	1719	1719	1719
1st stage Wald (degree)	527	527	527	767	767	767

Notes: Each estimation controls for the running separately at each cutoff (above and below).

† $p \leq 0.1$, * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$.

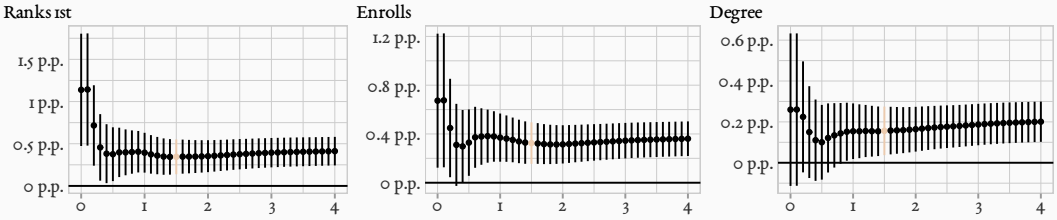
◂ Back

Varying bandwidths (broad fields)



Back

Varying bandwidths (narrow fields)



Back

Placebo

	Broad fields			Narrow fields		
	Ranks 1st	Enrolls	Earns degree	Ranks 1st	Enrolls	Earns degree
Child above cutoff	0.02	−0.09	−0.03	−0.11	−0.23	−0.12
	(0.17)	(0.18)	(0.18)	(0.15)	(0.16)	(0.15)
Child enrolls	0.07	−0.39	−0.11	−0.42	−0.86	−0.47
	(0.72)	(0.77)	(0.77)	(0.57)	(0.59)	(0.57)
Child receives degree	0.19	−1.11	−0.32	−1.37	−2.85	−1.55
	(2.04)	(2.17)	(2.15)	(1.90)	(1.95)	(1.89)
Observations	545 962	545 962	545 962	538 615	538 615	538 615
Control group mean	8.68%	9.46%	8.8%	7.02%	6.83%	6.08%
Bandwidth	1.5	1.5	1.5	1.5	1.5	1.5
1st stage Wald (enrolls)	3229	3229	3229	4358	4358	4358
1st stage Wald (degree)	490	490	490	522	522	522

† $p \leq 0.1$, * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$.

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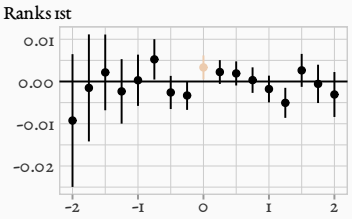
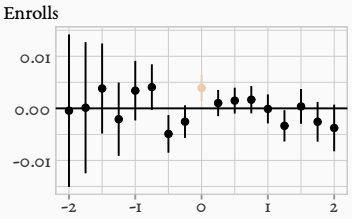
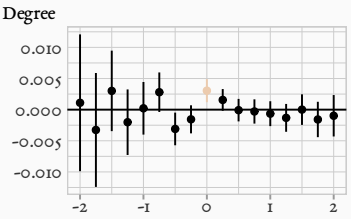
Placebo cutoffs (broad fields)







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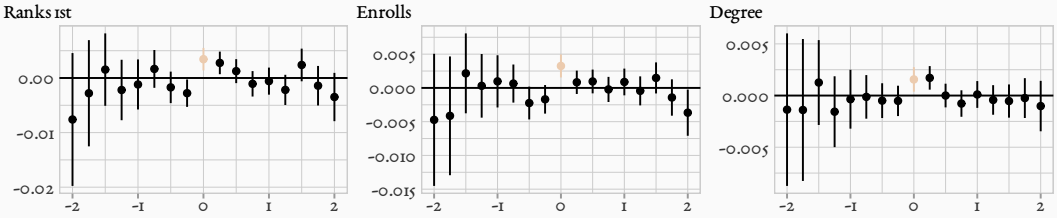
Placebo cutoffs (narrow fields)



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Only top-ranked options

	Broad fields			Narrow fields		
	Ranks 1st	Enrolls	Earns degree	Ranks 1st	Enrolls	Earns degree
Parent above cutoff to *j*	0.37*	0.38*	0.27*	0.40**	0.31*	0.16†
	(0.18)	(0.16)	(0.12)	(0.15)	(0.13)	(0.09)
Parent enrolls in *j*	2.29*	2.34*	1.71*	2.06**	1.60*	0.84†
	(1.14)	(1.00)	(0.73)	(0.76)	(0.64)	(0.45)
Parent receives degree in *j*	3.35*	3.42*	2.50*	3.09**	2.40*	1.26†
	(1.66)	(1.46)	(1.07)	(1.14)	(0.96)	(0.67)
Observations	572 782	572 782	572 782	547 910	547 910	547 910
Control group mean	11.02%	8.14%	4.1%	6.66%	4.25%	1.96%
Bandwidth	1.5	1.5	1.5	1.5	1.5	1.5
1st stage Wald (enrolls)	1451	1451	1451	1976	1976	1976
1st stage Wald (degree)	713	713	713	924	924	924

† $p \leq 0.1$, * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$.

Back

Donut estimation

	Broad fields			Narrow fields		
	Ranks 1st	Enrolls	Earns degree	Ranks 1st	Enrolls	Earns degree
Parent above cutoff to *j*	0.33*	0.39**	0.30**	0.34**	0.33***	0.16*
	(0.14)	(0.13)	(0.09)	(0.11)	(0.09)	(0.06)
Parent enrolls in *j*	2.27*	2.68**	2.08**	1.96**	1.85***	0.89**
	(0.98)	(0.86)	(0.64)	(0.60)	(0.49)	(0.34)
Parent receives degree in *j*	3.68*	4.34**	3.36**	3.18***	3.00***	1.44**
	(1.59)	(1.39)	(1.04)	(0.97)	(0.80)	(0.56)
Observations	840 926	840 926	840 926	858 503	858 503	858 503
Control group mean	10.35%	7.85%	3.97%	5.8%	3.7%	1.65%
Bandwidth	1.5	1.5	1.5	1.5	1.5	1.5
1st stage Wald (enrolls)	1709	1709	1709	2301	2301	2301
1st stage Wald (degree)	744	744	744	1046	1046	1046

† $p \leq 0.1$, * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$.

◂ Back

Quadratic running variable polynomials

	Broad fields			Narrow fields		
	Ranks 1st	Enrolls	Earns degree	Ranks 1st	Enrolls	Earns degree
Parent above cutoff to *j*	0.35†	0.46**	0.38**	0.38**	0.38**	0.16†
	(0.19)	(0.17)	(0.13)	(0.14)	(0.12)	(0.08)
Parent enrolls in *j*	2.89†	3.80**	3.14**	2.51**	2.52**	1.04†
	(1.58)	(1.39)	(1.03)	(0.92)	(0.78)	(0.53)
Parent receives degree in *j*	4.97†	6.54**	5.40**	4.24**	4.26**	1.76†
	(2.71)	(2.39)	(1.78)	(1.56)	(1.31)	(0.90)
Observations	840 926	840 926	840 926	858 503	858 503	858 503
Control group mean	10.35%	7.85%	3.97%	5.8%	3.7%	1.65%
Bandwidth	1.5	1.5	1.5	1.5	1.5	1.5
1st stage Wald (enrolls)	821	821	821	1202	1202	1202
1st stage Wald (degree)	293	293	293	485	485	485

† $p \leq 0.1$, * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$.

Back

Holding institution constant

	Field-institution			Field (holding institution constant)		
	Ranks 1st	Enrolls	Earns degree	Ranks 1st	Enrolls	Earns degree
Parent above cutoff to *j*	0.44***	0.36***	0.18***	0.92**	0.69*	0.20
	(0.08)	(0.07)	(0.04)	(0.35)	(0.28)	(0.16)
Parent enrolls in *j*	2.00***	1.62***	0.83***	3.12**	2.35*	0.68
	(0.36)	(0.31)	(0.17)	(1.19)	(0.95)	(0.53)
Parent receives degree in *j*	3.24***	2.63***	1.34***	5.82**	4.37*	1.26
	(0.58)	(0.50)	(0.28)	(2.22)	(1.76)	(0.99)
Observations	1 160 176	1 160 176	1 160 176	86 913	86 913	86 913
Control group mean	3.18%	2.17%	0.65%	4.17%	2.53%	0.81%
Bandwidth	1.5	1.5	1.5	1.5	1.5	1.5
1st stage Wald (enrolls)	4488	4488	4488	810	810	810
1st stage Wald (degree)	2261	2261	2261	249	249	249

† $p \leq 0.1$, * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$.

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