An illustration of the experimental approach – the case of EPIS

EPIS (Portugal)

- "Business people for social inclusion"
- Social sector organisation supported by ~100 large firms and endorsed by the president of the country
- Several programs supporting students around Portugal since 2006
- Engagement with multiple stakeholders (ministry of education, local councils, local schools, business community, research community)
- Development of RCT since 2014

"Mediators" programme (1)

- Goal: promote student achievement in lower secondary school
- Novel methodology (I): strengthening non-cognitive skills
 - Self-esteem, motivation, dedication, organisation, good relationships with colleagues, teachers, relatives, etc
 - Relevant skills: 'programs that enhance soft skills have an important place in an effective portfolio of public policies' (Heckman & Kautz, 2012)
- Novel methodology (II): preliminary screening of students, to identify and focus the programme on those at greater risk of failure
 - Four dimensions taken into account: student, parents, school, and the region
- "(How) Do Non-Cognitive Skills Programs Improve Adolescent School Achievement? Experimental Evidence"

"Mediators" programme (2)

- Mediation work developed by education and psychology experts, hired by the promoting organisation, EPIS, local councils, and the Education Dept in PT
 - Each mediator works with around 60 students
 - Mediation involves one-to-one or small group sessions (approx 20 mins every two weeks)
- Comprehensive IT system, including student performance data



This evaluation

- Two full academic years (2014/15 and 2015/16)
- Three regions, 55 schools, 51 mediators
- 1,029 classes, 2.959 signalled students
- Counterfactual methodology: impact as difference between what occurred and what would have occurred if programme had not been implemented
- Experimental evaluation driven by differences between signalled students and capacity of available teachers



Practical Exercise - Data

Consider the data available from Moodle, with the following variables:

aluno_id: internal number (anonymized) of each student escola_id: internal number (anonymized) of each school ano: year of schooling attended by the student (7th or 8th) idade: student age (in years) fem: dichotomic variable ('dummy variable') equal to 1 for girls screening aluno: student-level diagnostic variable screening familia: diagnostic variable at the student's family level screening escola: diagnostic variable at student's school level notas negativas p1: number of negative grades in the subjects of the first period of 2014/15

Practical Exercise - Data

negativa_mat_p1: dichotomic variable equal to 1 if the student has negative grades in mathematics in the first period of 2014/15 (before the start of the program)

negativa_port_p1: dichotomic variable equal to 1 if the student has negative grades in Portuguese in the first period of 2014/15 (before the start of the program)

negativa_ingles_p1: dichotomic variable equal to 1 if the student has negative english grades in the first period of 2014/15 (before the start of the program)

transitou: dichotomic variable equal to 1 if the student transited at the end of the 2014/15 school year – the second variable for assessing the impact of the program

transitou2: dichotomic variable equal to 1 if the student has passed both school years (2014/15 and 2015/16) – main variable for assessing the impact of the program

GT: dichotomic variable equal to 1 if the student was randomly selected for the treatment group, 0 if the student was randomly selected for the control group, and not defined for non-pre-selected students for potential participation in the program

Practical Exercise – Steps / Questions

- 1. Import the file into Stata (or Excel)
- 2. Present descriptive statistics of the key variables
- 3. Estimate a naive evaluation of the program, ignoring randomisation
- 4. Are there significant differences between treated students and the remaining students?
- 5. Draw on the RCT to estimate the counterfactual impact of the program
- 6. Is there evidence of heterogeneity?

Another illustration of the experimental approach

"Providing advice to jobseekers at low cost: An experimental study on online advice", by M. Belot, Ph. Kircher e P. Muller (Review of Economic Studies, 2019)

We develop and evaluate experimentally a novel tool that redesigns the job search process by providing tailored advice at low cost. We invited jobseekers to our computer facilities for twelve consecutive weekly sessions to search for real jobs on our web interface. For one-half, instead of relying on their own search criteria, we use readily available labour market data to display relevant alternative occupations and associated jobs. The data indicate that this broadens the set of jobs they consider and increases their job interviews especially for participants who otherwise search narrowly and have been unemployed for a few months.

Data set:

https://academic.oup.com/restud/article/86/4/1411/5115940#supplementary-data

Summary

- RCT based on providing differentiated and targeted information about job opportunities to jobseekers
 - Based on statistical analysis of labour market transitions, skill transferability, relationships between vacancies and candidates
 - Promoting job mobility
 - Low and fixed cost (€25k)
- 300 jobseekers recruited from Scotland jobcentres in 2013 and 2014
- Alternative portal made available after three weeks
- Effects on jobseeker activities and interviews

TABLE 1 Randomization scheme

	Monday			Tuesday			
	10 AM	1 PM	3:30 PM	10 AM	1 PM	3:30 PM	
Wave 1 Wave 2	Control Treatment	Treatment Control	Control Treatment	Treatment Control	Control Treatment	Treatment Control	

TA	ΒL	E	2

	Outcome variables				
	Listed vacancies	Applications	Interviews		
In lab:					
Number	\checkmark	\checkmark	\checkmark		
Occupational breadth	\checkmark	\checkmark	-		
Geographical breadth	\checkmark	\checkmark			
Core/Non-core occ's			\checkmark		
Outside lab:					
Number		\checkmark	\checkmark		

TABLE 4 Characteristics of the treatment and control group

	Control group		Treatment group			T-test	
	Mean	Min	Max	Mean	Min	Max	p-value
Demographics:							
Female (%)	42			43			0.83
Age	36	18	62	36	18	64	0.85
High educ ^a (%)	44			41			0.63
Survey qualification level	4.2	1	8	4.4	2	8	0.36
White (%)	80			80			0.97
Number of children	0.66	0	5	0.38	0	5	0.01
Couple (%)	25			21			0.41
Any Children (%)	31			24			0.17
Job search history:							
Expect job within 12 weeks (%)	0.59			0.58			0.93
Vacancies applied for	75	0	1,000	53	0	1,000	0.18
Interviews attended	2.4	0	50	2.2	0	50	0.68
Jobs offered	0.37	0	5	0.48	0	8	0.43
At least one offer (%)	20			20			0.91
Days unemployed (mean)	290	1	5,028	228	1	5,141	0.39
Days unemployed (median)	81	1	5,028	77	1	5,141	
Less than 183 days (%)	75			78			0.60
Less than 366 days (%)	84			87			0.54
Jobseekers allowance (£)	49	0	225	56	0	1,005	0.46
Housing benefits (£)	65	0	600	62	0	660	0.90
Other benefits (£)	9.7	0	280	18	0	700	0.41

	Control group		Treatment group			T-test	
	Mean	Min	Max	Mean	Min	Max	p-value
Weekly search activities in Weeks 1-3:							
Listed	493	4.3	3,049	493	1	1,966	1.00
Viewed	25	3	86	26	0	119	0.57
Saved	10	0	65	11	0	79	0.54
Applied	3.3	0	45	2.5	0	33	0.14
Interview	0.098	0	3.3	0.083	0	1.5	0.66
Applications other	9.3	0	68	7.4	0	37	0.13
Interviews other	0.54	0	4	0.47	0	5	0.48
Broadness listed ^b	3.2	0	3.7	3.3	1	3.7	0.50
Broadness applied ^b	3	0	4	3.2	0	4	0.34
Hours spent searching ^c	11	0.5	43	12	1	43	0.15
Met caseworker (%)	0.32			0.28			0.48
Observations	152			143			

TABLE 4 Characteristics of the treatment and control group

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	Bread	Number of listings	
	(1) Occupational	(2) Geographical	(3) Lab
Treatment			
X long unempl. and occ. broad	-0.10**	0.06	189.12
	(0.05)	(0.04)	(135.01)
X short unempl. and occ. broad	-0.05	-0.04	-252.80^{**}
	(0.05)	(0.05)	(120.19)
X long unempl. and occ. narrow	0.36**	-0.04	23.35
	(0.15)	(0.05)	(62.51)
X short unempl. and occ. narrow	0.32**	-0.01	-112.82
	(0.13)	(0.05)	(116.52)
Model	Linear	Linear	Linear
Observation weeks	1-12	1-12	1-12
(N)	540	541	541

TABLE 7 Effect of intervention on listed vacancies—interactions

Notes: Each column represents one regression. All regressions include time-slot fixed effects, period fixed effects (separately for each subgroup), individual random effects and individual characteristics. Standard errors clustered by individual in parentheses. **p < 0.05.

TABLE 10 Effect of intervention on interviews

		Number o interview:	f s
	(1) Lab	(2) Survey	(3) Total
Treatment	0.61 (0.79)	0.40* (0.27)	0.44* (0.28)
Treatment			
X occupationally broad	-0.37 (0.43)	-0.00 (0.28)	-0.07 (0.24)
X occupationally narrow	1.13 (1.26)	0.86** (0.47)	1.03*** (0.55)
Model	Poisson	Poisson	Poisson
Observation weeks	1 - 10	1-10	1-10
N	540	466	464

Notes: Each column represents two separate regressions. All regressions include time-slot fixed effects, period fixed effects (separately for each subgroup), individual random effects and individual characteristics. Columns (1)–(3) are Poisson regression models where we report [exp(coefficient)–1], which is the percentage effect. Standard errors clustered by individual in parentheses. p < 0.10, p < 0.05, p < 0.01.

Solutions

- import delimited using epis.txt, clear
- li
- su
- gen gt2=gt // new treatment variable, equal to zero even for non-signalled students
- replace gt2=0 if gt==.
- regr transitou gt2 // outcome analysis under naive comparison
- regr transitou2 gt2
- ttest ano, by(gt2) // differences between treated and all other students
- ttest fem, by(gt2)
- ttest notas_negativas_p1, by(gt2)
- ttest negativa_mat_p1, by(gt2)

- regr transitou gt // impact evaluation under RCT
- regr transitou2 gt
- ttest ano, by(gt) // differences between treated and control group - RCT
- ttest fem, by(gt)
- ttest notas_negativas_p1, by(gt)
- ttest negativa_mat_p1, by(gt)
- gen gt_fem=gt*fem
- regr transitou gt gt_fem // impact evaluation under RCT - heterogeneity analysis
- regr transitou2 gt gt_fem