



***What training for the unemployed?
An impact evaluation
for targeting training courses***

S. Duranti, M. L. Maitino, V. Patacchini, C. Rampichini, N. Sciclone

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MAIN OBJECTIVE

To evaluate the effectiveness of training courses in improving the employment prospects of unemployed

METHODOLOGY

The evaluation is based on non experimental control group design. Exploiting administrative data, impact estimates are obtained controlling for treated and controls initial conditions through statistical matching (propensity score matching and nearest neighbor matching)

DATA AND PERIOD

Analysis relies on administrative data from three regional archives: the dataset on European Social Fund (ESF) activities, the dataset on unemployed signed up by Public Employment Services and the Labour market information system (hirings, transformations, fixed-term extensions and terminations of employment relationships). All data refer to Tuscany (Italy) in period 2011-2014.

VALUE ADDED Detailed heterogeneity analysis allowed by the availability of data covering the full programming period of ESF.

FINDINGS We find a positive impact of training on employment outcomes, especially for vocationally oriented courses. Anyway, targeting of activities is essential: long courses for those with worst *a priori* employment chances and short ones for those easiest to relocate in the labour market.

Background

- **Training is a relevant instrument in the toolbox of active labour market policies, helping unemployed to find work through upskilling and reskilling programs.**
- **No consensus exists on the effectiveness of training. In fact, literature on the evaluation of training courses provides mixed results (Card et al., 2015; Caliendo and Schmidl, 2016).**
- **Anyway, there is a general consensus on the heterogeneous effects of training: the effectiveness varies among different types of courses and groups of participants (Biewen et al., 2014; Lechner, 2007; Rinne et al., 2011)**
- **Therefore, the optimality of the assignment process of jobseekers to courses becomes crucial for the overall effectiveness of training (Bell and Orr, 2002; Lechner and Smith, 2005; Behncke et al, 2007; Barnow and Smith, 2015; McCall, Smith and Wunsh, 2016)**
- **In the last years, there has been growing evidence on the effectiveness of training in Italy (Irpel, 2011; De Poli and Loi, 2014; Costabella, 2017).**

Research questions

- **Has training improved the re-employment prospects of the unemployed?**
- **Is the effect of training persistent over time?**
- **Which type of courses work best and which ones do not work at all?**
- **Which kind of unemployed benefit the most from training courses?**
- **Could targeting of training improve the overall effectiveness of the system?**

Identification strategy

Group of treated

Unemployed who have started a course between 2011 and 2014. Trainees are grouped by two-month periods on the basis of the starting date of the course, in order to match them with the unemployed in the same period not participating in any training course, who represent the control group.

Source: European Social Fund database

Number: 13,266 treated

Identification strategy

Counterfactual approach based on nearest neighbour matching

Matching variables

Exact matching on: sex, nationality, area and sector of activity in the last two years
Nearest neighbour matching on: age, years of education, length of unemployment, days worked in the last 2 years, previous occupation.

Group of controls

For all two-month periods identified on the basis of the courses' starting dates, the control group is represented by a sample of unemployed people being registered by Public Employment Services in the middle of the period. We followed a dynamic approach, where the controls for a subject participating in a course starting in period t are represented by jobseekers not starting a training course at the same period t .

Source: Public Employment Services database

Number: 264,340 controls

Outcome variables

At least a hiring within 9, 12 and 18 months since the beginning of the course
Employment status in every month (1 to 24).

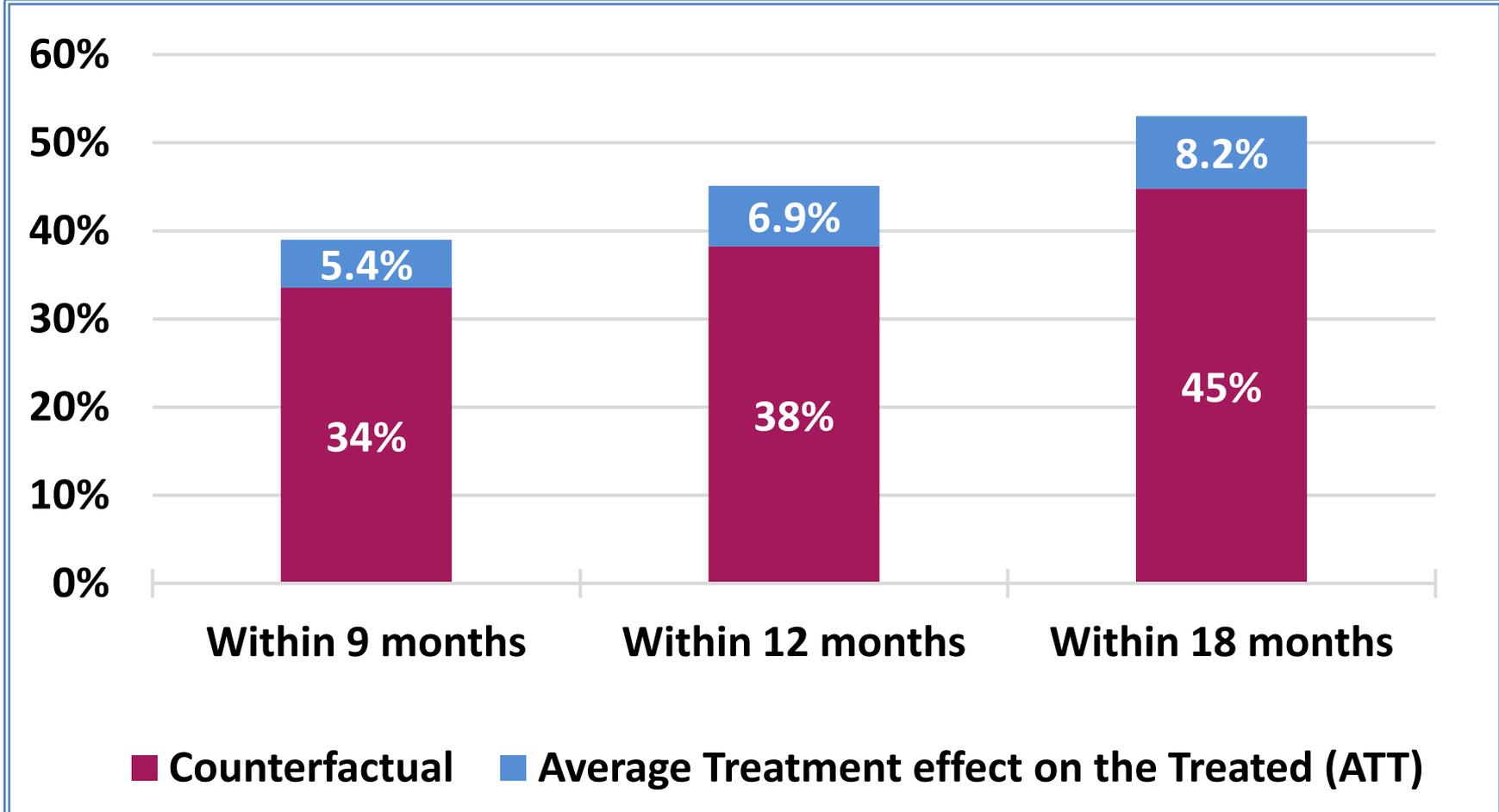
Source: administrative data on labour market flows

Balancing test

	Mean standardized differences		Variance ratio	
	Pre-matching	Post-matching	Pre-matching	Post-matching
Age	0.19	0.05	0.79	0.99
Length of unemployment	- 0.05	0.01	1.12	1.04
Days worked in previous two years	- 0.15	- 0.01	0.89	1.02
Years of education	0.13	0.00	0.84	1.04

Effect of training courses on employment

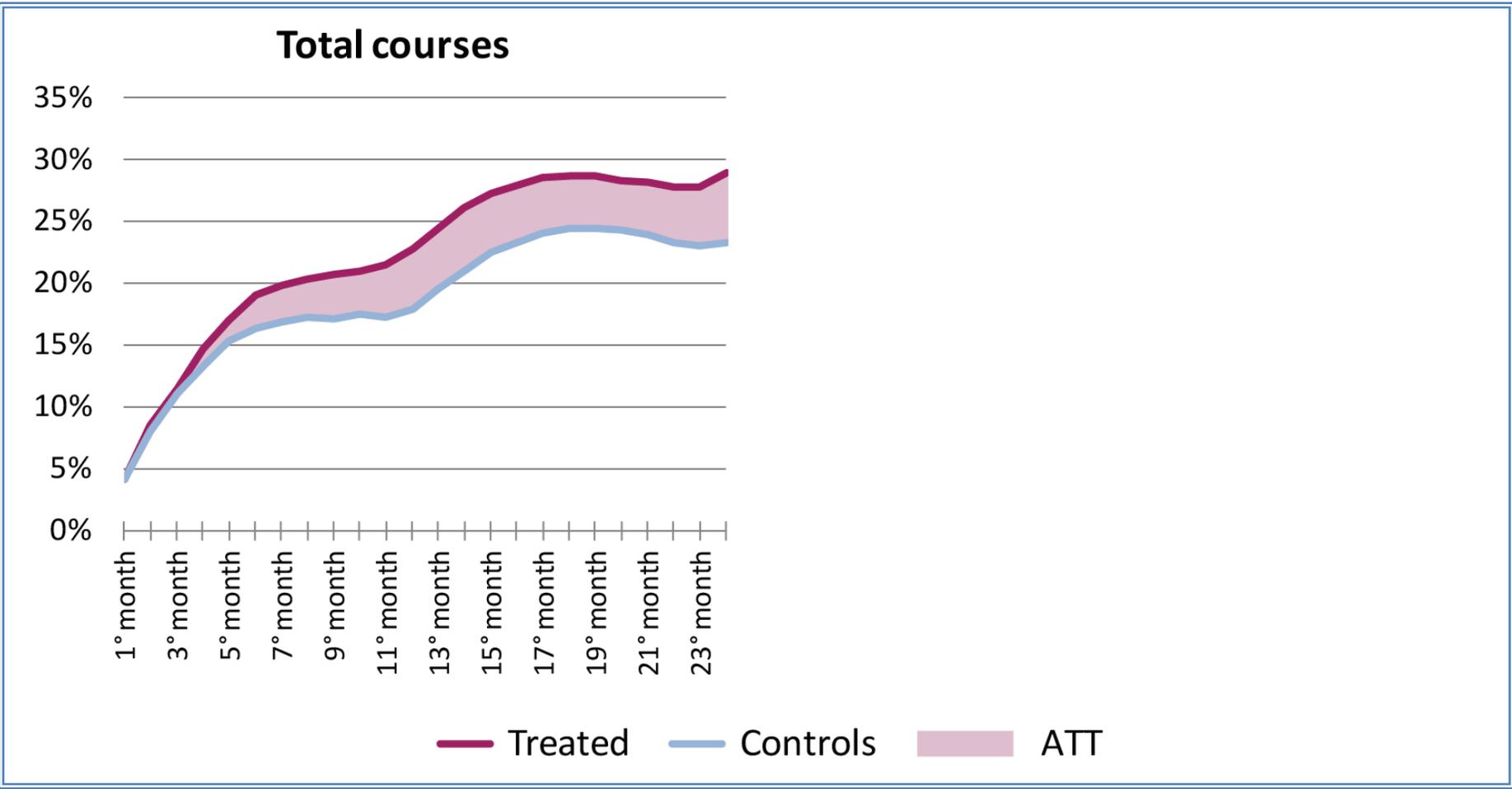
EXIT RATE FROM UNEMPLOYMENT TO EMPLOYMENT
Probability of being hired



Note: all estimates are statistically significant at 1%

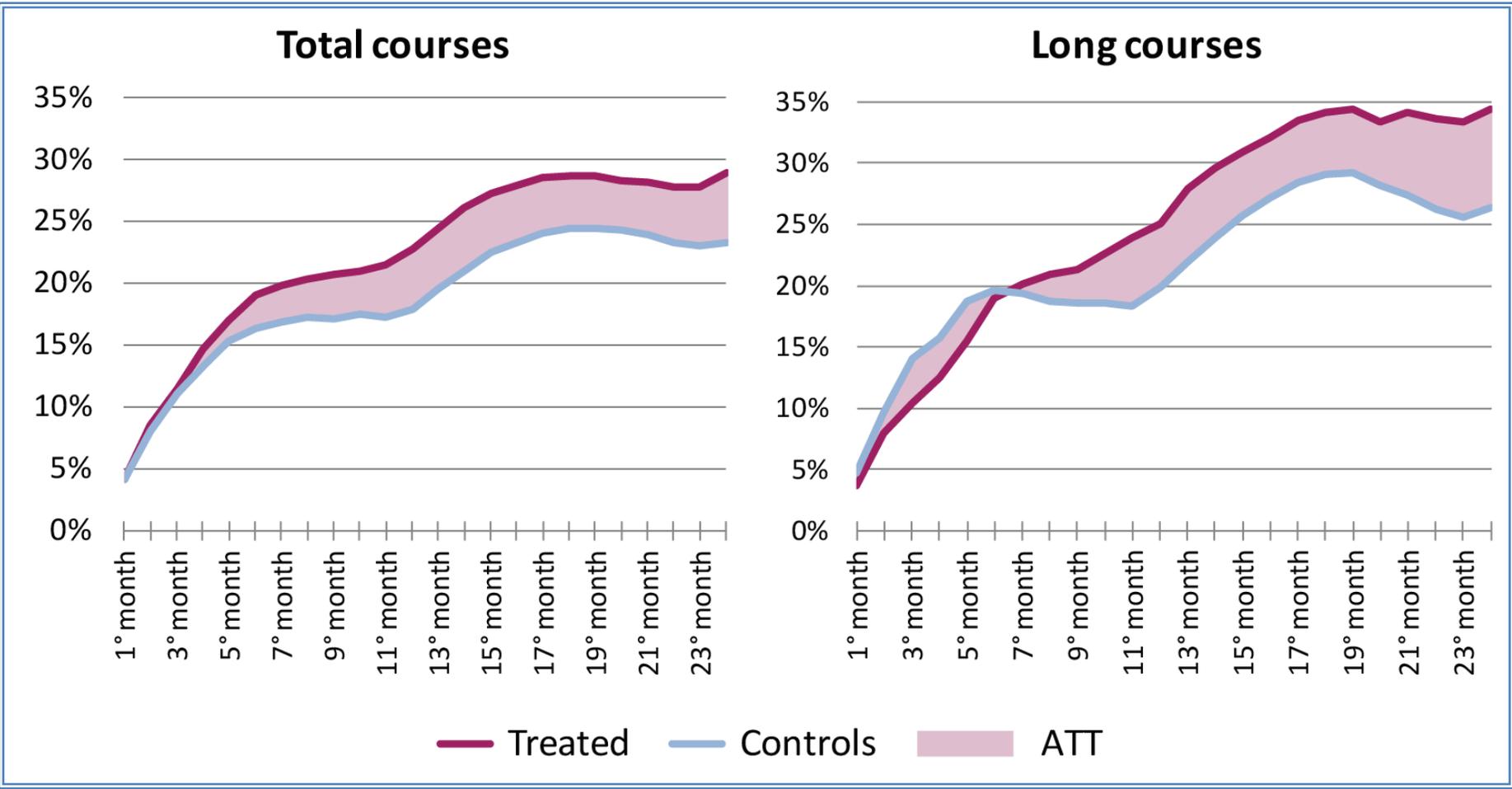
Persistence of the effect of training over time

Monthly probability of being employed



Persistence of the effect of training over time

Monthly probability of being employed

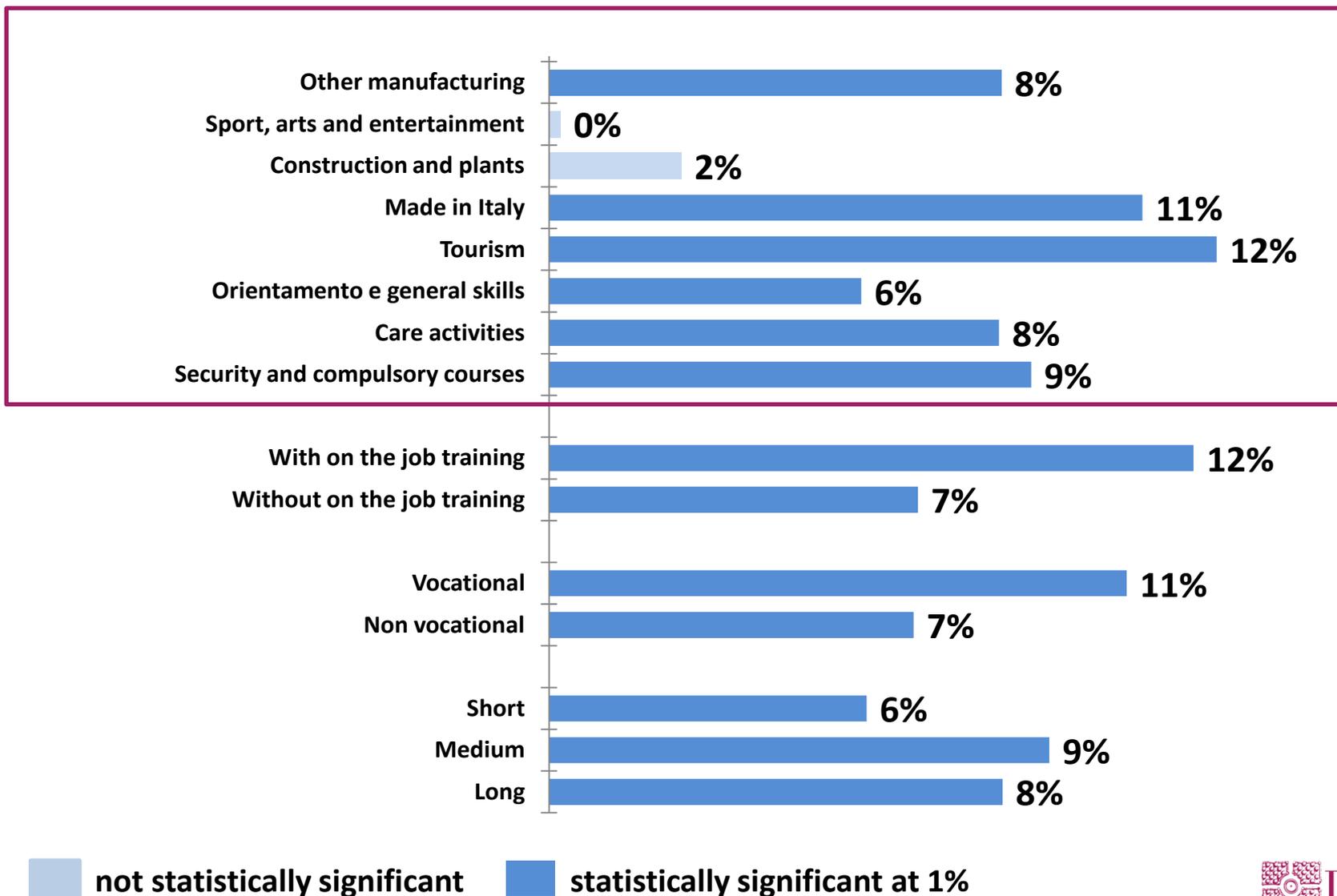


Heterogeneity of effect by type of course

PROBABILITY OF LEAVING UNEMPLOYMENT WITHIN 18 MONTHS
Average treatment effect on the treated (ATT)

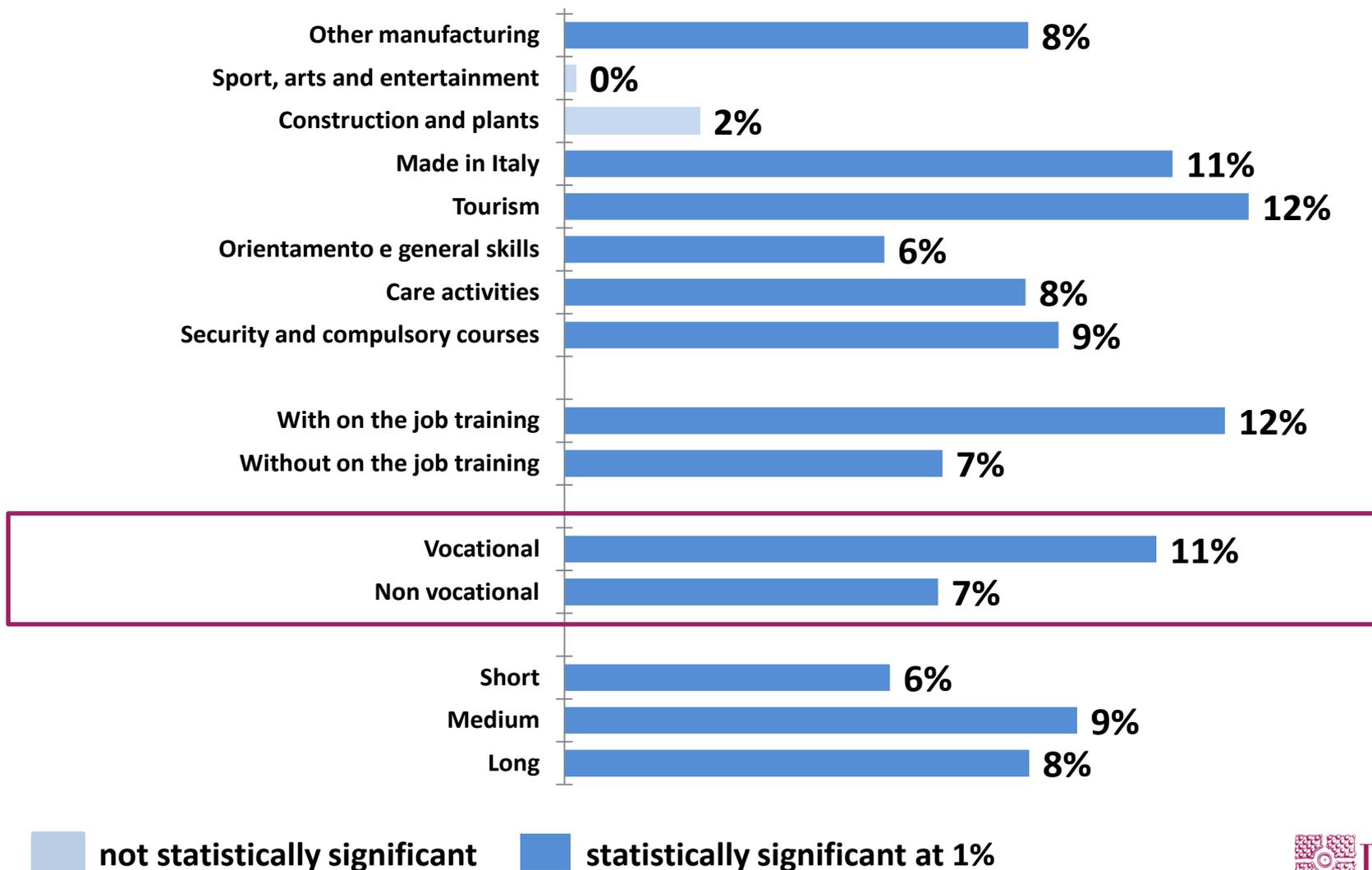
Heterogeneity of effect by type of course

PROBABILITY OF LEAVING UNEMPLOYMENT WITHIN 18 MONTHS *Average treatment effect on the treated (ATT)*



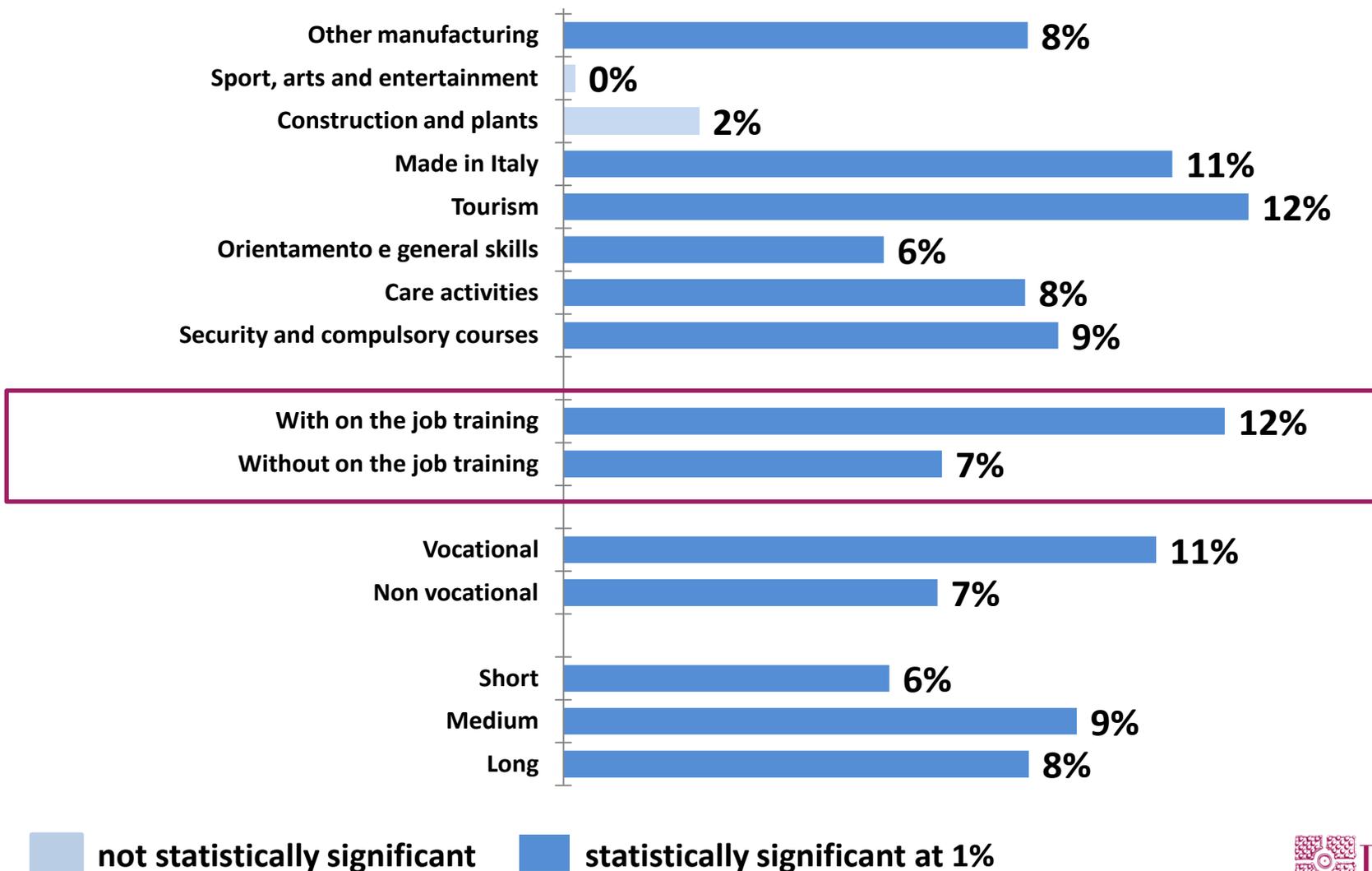
Heterogeneity of effect by type of course

PROBABILITY OF LEAVING UNEMPLOYMENT WITHIN 18 MONTHS *Average treatment effect on the treated (ATT)*



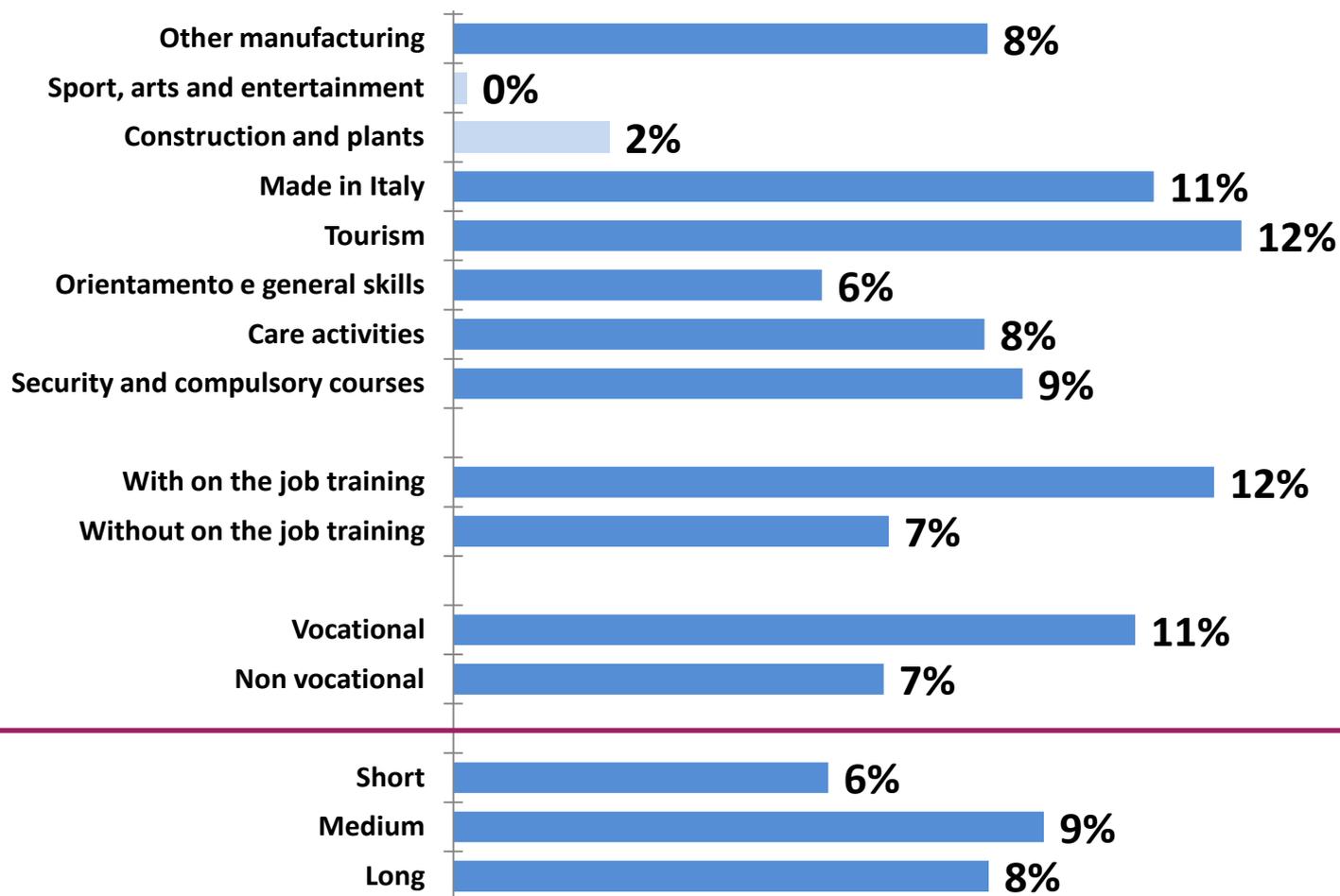
Heterogeneity of effect by type of course

PROBABILITY OF LEAVING UNEMPLOYMENT WITHIN 18 MONTHS *Average treatment effect on the treated (ATT)*



Heterogeneity of effect by type of course

PROBABILITY OF LEAVING UNEMPLOYMENT WITHIN 18 MONTHS *Average treatment effect on the treated (ATT)*



■ not statistically significant ■ statistically significant at 1%

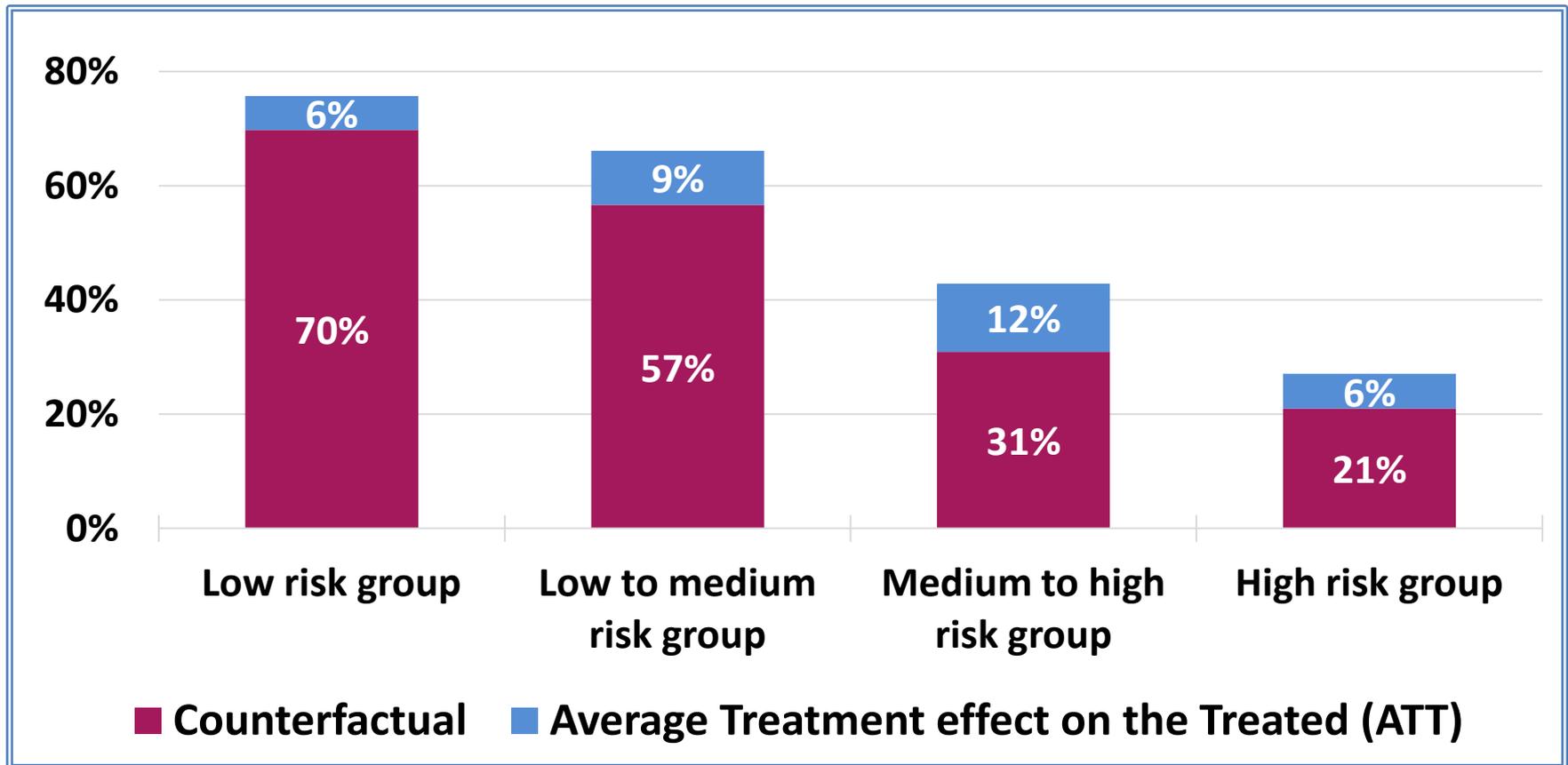
Heterogeneity of effect by type of unemployed

PROBABILITY OF LEAVING UNEMPLOYMENT WITHIN 18 MONTHS

Probability of being hired

Heterogeneity of effect by type of unemployed

PROBABILITY OF LEAVING UNEMPLOYMENT WITHIN 18 MONTHS
Probability of being hired



Note: all estimates are statistically significant at 1%

Heterogeneity of effect by type of unemployed and course

Heterogeneity of effect by type of unemployed and course

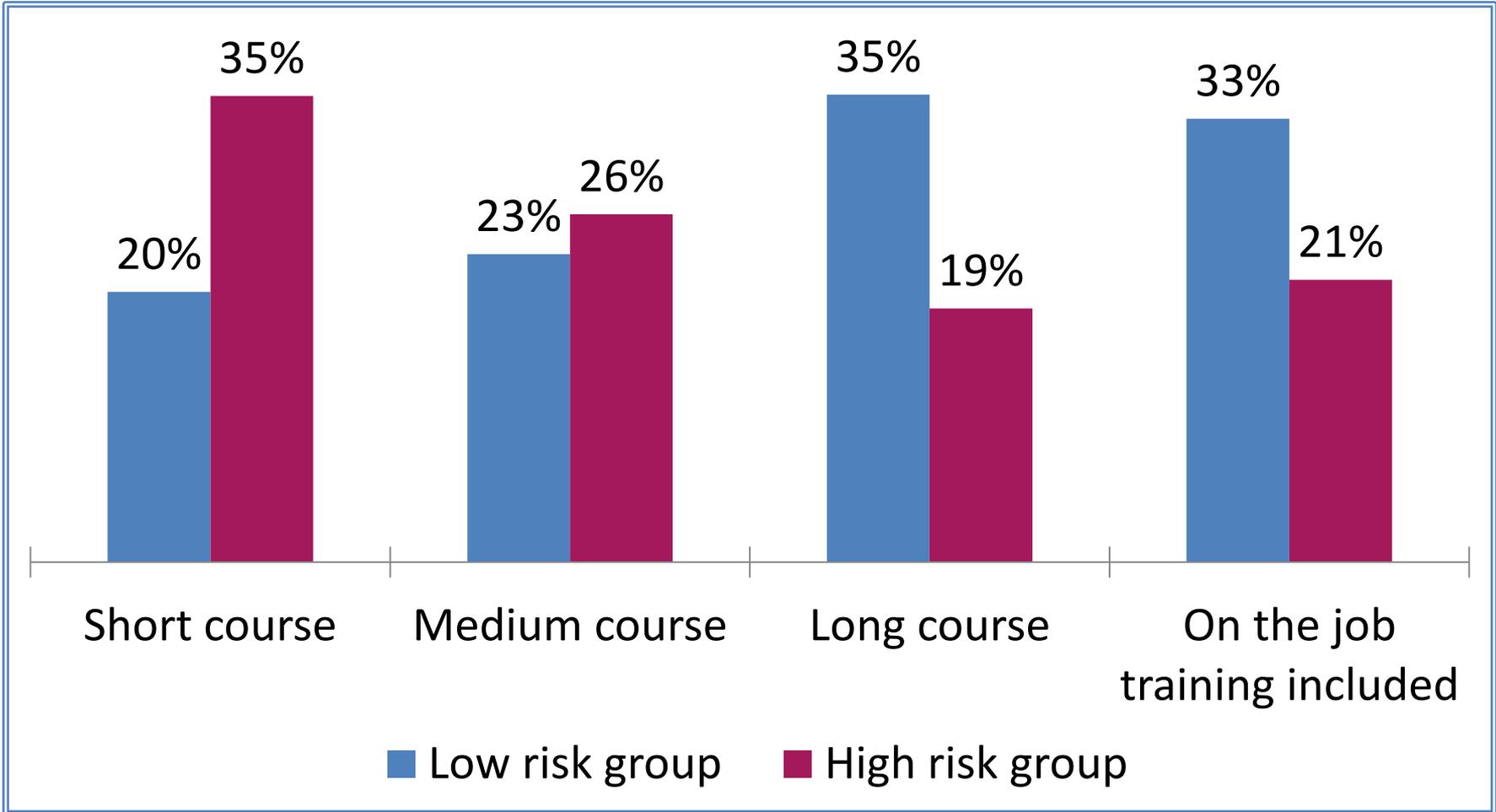
PROBABILITY OF LEAVING UNEMPLOYMENT WITHIN 18 MONTHS *Average treatment effect on the treated (ATT)*

	Lenght			Content		On the job training included	
	Short	Medium	Long	Vocational	Non vocational	Yes	No
Low risk group	7.6%	5.6%	5.2%	6.8%	4.9%	4.3%	6.7%
Low to medium risk group	7.4%	10.0%	11.1%	8.4%	9.6%	8.7%	9.9%
Medium to high risk group	6.1%	14.5%	11.7%	14.8%	8.8%	15.3%	10.8%
High risk group	0.7%	9.4%	9.7%	10.0%	2.9%	14.4%	4.1%

Note: Estimates in bold are statistically significant at least 10%

Does current allocation reflect our results?

ALLOCATION OF TRAINEES BETWEEN TYPES OF COURSES



Maximising employment outcomes

Estimation of a multilevel logit regression model on trainees:

$$\text{logit}(\pi_{ij}) = \beta x_i + \gamma z_j + \delta b_{ij} + u_j$$

i is the level of the trainee and j the level of the course

π_{ij} is the probability of leaving unemployment within 18 months

x_i is a matrix of personal covariates, including the profiling class

z_j is the type of course (short, medium, long)

b_{ij} is the interaction between the profiling class and the type of course.

We use all combination of β , γ and δ to identify the type of course which maximizes each trainee's probability of leaving unemployment.

Towards a targeting of training activities

Towards a targeting of training activities

OUTCOMES OF DIFFERENT ASSIGNMENT RULES

Profiling classes	Current allocation	Optimal allocation
Low risk group	75.7%	77.9%
Low to medium risk group	66.1%	68.6%
Medium to high risk group	42.9%	45.6%
High risk group	27.1%	31.2%
TOTAL TRAINEES	53.0%	55.9%

Conclusions

- **Training improves re-employment prospects of the unemployed.**
- **This positive effect varies between type of courses and type of unemployed.**
- **The matching between unemployed and type of course is important to improve the overall effectiveness of the training system.**
- **Our analysis provides the policy maker some findings useful to better target training courses.**

Future research developments

- **To collect data on self-employment outcomes to increase the robustness of results.**
- **To extend the analysis to first time jobseekers.**
- **To compare the effect of training with that of other active labour market policies (job search assistance and monitoring, public sector work programs, internship, Apprenticeship, employment incentives etc.).**



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Profiling score and groups

			Not crisis area			Crisis area		
Age class	Sex	Education level	Short term unemployed	Long term unemployed	Very long term unemployed	Short term unemployed	Long term unemployed	Very long term unemployed
Under 29	M	Compulsory education	2 (0.54)	3 (0.26)	4 (0.17)	1 (0.6)	3 (0.25)	4 (0.18)
		Sec./Tert. education	1 (0.7)	2 (0.41)	2 (0.35)	1 (0.73)	2 (0.42)	3 (0.33)
	F	Compulsory education	2 (0.5)	3 (0.22)	4 (0.14)	2 (0.52)	3 (0.23)	4 (0.13)
		Sec./Tert. education	1 (0.65)	2 (0.38)	2 (0.36)	1 (0.68)	3 (0.34)	3 (0.29)
30-49	M	Compulsory education	2 (0.48)	3 (0.24)	4 (0.17)	2 (0.5)	3 (0.23)	4 (0.18)
		Sec./Tert. education	1 (0.59)	3 (0.31)	3 (0.2)	1 (0.64)	3 (0.35)	4 (0.18)
	F	Compulsory education	2 (0.48)	3 (0.21)	4 (0.16)	2 (0.54)	3 (0.22)	4 (0.14)
		Sec./Tert. education	2 (0.57)	3 (0.29)	3 (0.24)	1 (0.64)	3 (0.29)	4 (0.19)
50+	M	Compulsory education	3 (0.31)	4 (0.15)	4 (0.14)	3 (0.35)	4 (0.14)	4 (0.15)
		Sec./Tert. education	2 (0.39)	4 (0.2)	4 (0.07)	2 (0.44)	3 (0.23)	4 (0.06)
	F	Compulsory education	2 (0.43)	4 (0.16)	4 (0.15)	2 (0.46)	3 (0.21)	4 (0.14)
		Sec./Tert. education	2 (0.39)	4 (0.17)	4 (0.07)	2 (0.46)	4 (0.17)	4 (0.05)

Mean features of unemployed, by profiling class

	Low risk	Medium to low risk	Medium to high risk	High risk
Average profiling score	0.65	0.49	0.26	0.15
Average age	31	39	38	44
Average length of unemployment (months)	4	8	25	35
Average years of education	13	11	12	9
% females	51%	71%	62%	58%
% natives	86%	78%	81%	76%
% living in crisis areas	57%	25%	35%	60%

Alternative treatment effects (1)

PROBABILITY OF LEAVING UNEMPLOYMENT WITHIN 18 MONTHS *Average treatment effect on the treated (ATT)*

		Short course	Medium course	Long course
Low risk group	Short course		-0.67%	0.40%
	Medium course	-2.10%		0.35%
	Long course	-4.94%	-3.99%	
Low to medium risk group	Short course		6.77%	-3.30%
	Medium course	-0.64%		-4.09%
	Long course	3.24%	10.64%	
Medium to high risk group	Short course		-2.91%	-9.96%
	Medium course	2.27%		-0.98%
	Long course	6.41%	3.76%	
High risk group	Short course		2.90%	-7.41%
	Medium course	7.11%		-3.26%
	Long course	6.48%	2.00%	

Note: Estimates in bold are statistically significant at least 10%

Alternative treatment effects (2)

PROBABILITY OF LEAVING UNEMPLOYMENT WITHIN 18 MONTHS *Average treatment effect on the treated (ATT)*

		With on the job training	Without on the job training
Low risk group	With on the job training		-4.40%
	Without on the job training	-0.20%	
Low to medium risk group	With on the job training		3.40%
	Without on the job training	-3.10%	
Medium to high risk group	With on the job training		2.10%
	Without on the job training	-6.00%	
High risk group	With on the job training		11.20%
	With on the job training	-8.70%	

Note: Estimates in bold are statistically significant at least 10%

Alternative treatment effects (3)

PROBABILITY OF LEAVING UNEMPLOYMENT WITHIN 18 MONTHS *Average treatment effect on the treated (ATT)*

		Vocational course	Non vocational course
Low risk group	Vocational course		-1.80%
	Non vocational course	-1.30%	
Low to medium risk group	Vocational course		0.80%
	Non vocational course	0.00%	
Medium to high risk group	Vocational course		5.10%
	Non vocational course	-7.50%	
High risk group	Vocational course		2.20%
	Non vocational course	-4.30%	

Note: Estimates in bold are statistically significant at least 10%