# IMPROVING EMPLOYABILITY
# FOR THE LEAST QUALIFIED UNEMPLOYED.
# LESSONS FROM A NEW FRENCH TRAINING
# PROGRAM

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# Improving employability for the least qualified unemployed. Lessons from a new French training program[1]

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## Abstract

For all jobseekers, and particularly for the least qualified, access to training and the quality of that training are crucial issues. The international literature on the impact of training reveals contrasting effects. In France, like in the Grand Est region, new training programs, *Itinéraire Compétences*, have been introduced between 2019 and 2022. These experiments involve the implementation of qualification paths to employment, with a greater emphasis on individualized training and taking account of individual difficulties, compared with regular training courses. We econometrically evaluate the contribution of *Itinéraire Compétences* compared with regular regional training courses in the Grand Est region, using micro econometrics for program evaluation. To achieve this, we consider data from the matching of the regional information system of the Grand Est region together with the FORCE database (Dares, French Ministry of Labor). On the whole, our results do not indicate any increase of the employability of individuals, nor a change in the features of the regular job found through the *Itinéraire Compétences* program compared to regular training programs. On the other hand, *Itinéraire Compétences* could help the less educated jobseekers (without any diploma level) in finding a regular job; besides, more educated individuals (ie. with high school diploma) may suffer from such a program in comparison to benefiting from a regular one. Hence, the study highlights the importance of targeting training for unemployed individuals distant from the job market.

*JEL Codes: M53, J68, C53.*
*Keywords: vocational training, investment plan in skills, econometrics of evaluation.*


## 1. Introduction

Since the end of the health crisis, the context of falling unemployment and growing recruitment difficulties has raised the issue of vocational training reform in renewed terms.

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In France, the *Plan d'Investissement dans les Compétences* (PIC), implemented by the Ministry of Labor, aims to train one million low-skilled young people and one million long-term unemployed individuals, while radically transforming the training offer. Aligned with the broader 2018-2022 Grand Investment Plan, this initiative represents a total investment of €15 billion. Implementation at the regional level occurs through the *Plan Régional d'Investissement dans les Compétences* (PRIC or PACTE) between the State and regions. Through this plan, the French Grand Est region intends to build a new training offer designed to enable the modularization of all training courses and the development of a skill-based approach. In line with the goals of the PACTE, the program implements qualifying pathways to employment aligned with actual and anticipated economic needs, ensuring access to training for vulnerable populations by strengthening key competencies. In 2020, according to the French National Statistical Institute (INSEE), individuals without any diplomas faced a 13.9% unemployment rate compared to 8% for the overall workforce. The *Itinéraire Compétences* program unfolds in a context marked by a high proportion of those furthest from employment, coupled with the need to enhance the human capital of the labor supply.

This article provides an evaluation of the impact of the *Itinéraire Compétences* program on post-training trajectories of individuals on the labor market, using methods from micro-econometrics. In the absence of a control group, the analysis aims to compare the levels of various employment-related outcome variables for trainees who participated in *Itinéraire Compétences* labelled training and those who benefit from regular training programs. The goal is to assess the added value of the experimentation compared to pre-existing programs, rather than the effect of a new training device (relative to the situation where a job seeker did not undergo any training program). The evaluation involves matching data from the regional information system (Athéna 2) with the Dares FORCE database, which aggregates various sources of administrative individual data enabling us to retrace people's career paths at the end of their training. We use multiple linear regression methods and matching estimators. Overall, we find no significant average effect for all trainees of undergoing an *Itinéraire Compétences* training program compared to regular training programs on employment trajectories of individuals in the twelve months following training completion. However, the analysis reveals a positive but moderate effect of *Itinéraire Compétences* programs on employment access for job seekers with the lowest educational qualifications. Conversely, a negative effect is detected for job seekers with higher education levels (High school certificate); for these individuals, number of days worked 12 months after training, as well as wage earnings over the same period, are lower than those resulting from regular training.

Our article aligns with the literature in applied economics concerning the effects of vocational training and the broader field of studying the effectiveness of Active Labor Market Programs (ALMP). A review conducted by Card *et al.* (2018) indicates that, compared to other programs, the effects of training actions are relatively limited in the short run but become more significant in the medium and long term. Additionally, the timing of training during the unemployment spell influences the chances of reemployment. For instance, Brodaty *et al.* (2001) demonstrate that training is more effective when initiated within the first year of the unemployment spell. Several studies suggest that the effectiveness of training programs varies based on the characteristics their recipients, such as the skill level (Cavaco *et al.*, 2013), gender (Bergemann and Van den Berg, 2008), or age (Bonnal *et al.*, 1997).

Thus, this study contributes to the literature on vocational training in several ways. First, to our knowledge, it represents one of the first evaluation of the French vocational training program *Itinéraire Compétences*. Second, it adds to the literature by confirming the notion that such new training programs do not have an additional effect on the overall target audience's return to employment compared to more standard programs. Third and last, these effects appear to be

contrasted depending on the time horizon and the target group of job seekers under consideration. Hence, it seems important to target training at jobseekers who are furthest from employment, particularly those with the lowest qualifications.

The rest of this paper is organized as follows. Section 2 provides a brief overview of the literature related to vocational training. Section 3 outlines the *Itinéraire Compétences* program. In Section 4, we present the mobilized data and the characteristics of job seekers who benefit from vocational training. Section 5 details the identification strategy used to evaluate the policy's contribution. Section 6 presents and discusses the results. The final section concludes.

## 2. Literature on the link between vocational training and return to employment

The literature in applied economics on the effects of vocational training aligns with the broader study of the effectiveness of active labor market programs, specifically within the realm of evaluating vocational training policies. One of the most cited references in this area is that one written by Heckman *et al.* (1999). A literature review conducted by Card *et al.* (2018) analyzes results from over 200 studies on active labor market policies, with half of them focusing on training. It reveals that, compared to other programs, the effects of training actions are relatively limited in the short run but become more significant in the medium to long run. Similar conclusions have been drawn in France, where individuals who undergo training programs do not always find employment more quickly than those who did not (Crépon *et al.*, 2012).

This outcome can be explained by a lock-in phenomenon: individuals who benefit from training programs spend less time actively searching for employment (Biewen *et al.*, 2014; Card *et al.*, 2018; Ham and Lalonde, 1996). Nevertheless, in the long run, a positive effect is observed: trainees gain employability and get a higher chance of securing stable employment. Using French data, Crépon *et al.* (2012) estimate an average additional duration of 100 days in unemployment and an additional duration of 330 days in employment following training. The study by Crépon *et al.* (2017) also underscores the need to strengthen support for training candidates. Developing vocational training could enhance the matching process between companies and individuals seeking employment by bolstering the quality of the return to work.

Moreover, the timing of training during the unemployment spell influences the chances of returning to employment. For instance, Brodaty *et al.* (2001) demonstrate that training is more effective when initiated within the first year of the unemployment spell. Specifically, Bolvig *et al.* (2003) find a maximal effect after eight months of unemployment. The duration and content of the training program also have an impact. Osikominu (2013) compares the effectiveness of two types of programs offered to unemployed individuals in Germany between 1999 and 2003: one with an average duration of one month aimed at trainees in job search techniques and another with an average duration of nine months allowing trainees to acquire productive skills. The results show that trainees reducing their job search efforts during their training period experience reduced duration of unemployment with short training, while long training programs increase it. However, the expected duration in employment after the unemployment spell is higher for job seekers who benefit from long training. A cost-benefit comparison confirms that the net gain from short training is maximum at the beginning of an unemployment spell, while the net gain from long training is highest after six months of unemployment at most.

Several articles suggest that the effectiveness of training programs varies based on beneficiary characteristics — such as qualification level (Cavaco *et al.*, 2013), gender (Bergemann and Van den Berg, 2008), for example. The effectiveness of targeted support actions for specific groups can be highly variable depending on beneficiary characteristics. This leads to a risk of selection

bias that an experimental or quasi-experimental approach must overcome. For example, over the period 1991-2006 in the UK, Banden *et al.* (2012) show that acquiring certified qualifications leads to a 10% increase in hourly wages for women, whereas the effect is not significant for men. More recently, the results of testing conducted in France by Cahuc *et al.* (2021) indicate that training accompanied by skills certification increases the probability of returning to employment only when the local unemployment rate is sufficiently low. Training programs that include practical work experience (such as internships) have proven to be more effective in bringing young individuals back to work (Brodaty *et al.*, 2001). Using French data for the period 1986-1988, Bonnal *et al.* (1997) demonstrate that training with work work-study program in a private company increases the chances of less qualified young individuals accessing sustainable employment, while training with work-study program in a public institution reduces the chances of more qualified young individuals. In Germany, over the period 1975-1997, Fitzenberger and Volter (2007) find that, overall, including internship or work-study program periods in training does not significantly increase average employability and wages. Hence, it is essential to analyze the effects of vocational training while considering these potential heterogeneities.

## 3. The *Itinéraire Compétences* experience in France

The *Plan d'Investissement dans les Compétences* (PIC), planed by the French Ministry of Labor and Solidarity, aims to train one million low-skilled young people and one million long-term unemployed individuals, while fundamentally transforming the offer of training programs. The Grand Investment Plan 2018-2022 represents a total investment of €15 billion. Implementation at the regional level takes the form of the *Plan Régional d'Investissement dans les Compétences* (PRIC or PACTE). In this context, the French region Grand Est has decided to construct a new training program through this plan, facilitating the modularization of the entire training framework and adopting a skill-based approach.

The uniqueness of the *Itinéraire Compétences* program, led by the Grand Est region, lies in its comprehensive transformation of the training offer across the entire region, aligning with the purposes of the PACTE.

*Itinéraire Compétences* responds to the desired objectives of the French State to improve the training offer. Even though the existing training offers may provide an adapted response for each situation, certain obstacles may sometimes lead to breakpoints in individuals' journeys, such as administrative barriers, lengthy pathways, and disjointed support. Additionally, individual follow-up was exclusively administrative and did not constitute operational pathway monitoring.

In response to these findings, *Itinéraire Compétences* aims to be a comprehensive support system for job seekers, providing a seamless journey from reception to employment (and beyond) through the combination of two components:

- An Individualized Pathway Construction Space: This allows individuals to benefit from competency diagnostics so they can receive advice at different stages of their journey. It includes an identified reference person, ensuring flexibility in support based on the individual's needs and those highlighted during the diagnostic, along with continuous support throughout the journey.

- An Integrated Training Pathway: This enables a smooth integration of the individual's occupational and transversal skills through the implementation of modules.

The Grand Est region's organization represents a fairly profound paradigm shift in intervention, substituting the usual logic of training organization pathways with module and competency-based logics. The goal of this new service offer is to promote a "comprehensive, modular, and open" approach. This entails transitioning from the usual logic of "training led by a Training Organization" to a system that organizes a service of training offer and brings together various actors (prescribers, Training Organizations, businesses, for instance). It also involves moving from a logic of purchasing training actions to purchasing training pathways and shifting from a qualification-oriented logic to an employability-oriented logic through the acquisition of competencies. Previously segmented spaces (reception / pathway construction / training, etc.) become interdependent, ensuring genuine support as the pathway progresses. This pathway is not fixed and evolves based on different diagnostics. Therefore, a need for additional training identified during the training phase will not be subjected to the rigidity of the pathway logic and the administrative constraints that arise from it. Instead, it will always be possible to address it as part of further development.

The scope of the program is extensive. The initial objective, before the health crisis, was for the entire regional training offer to transition towards the new organization by 2022. This encompasses all training pathways across the 10 departments (13 territories and 43 employment basins), covering 12 major professional sectors (40 sub-sectors). This involves numerous professional fields, training pathways, training operators, and diverse territories. The spirit of the PACTE is to align the training needs of individuals with those of businesses, which is consistent with the differentiation of needs in each professional sector, varying from one industry to another and within each territory.

## 4. Data and descriptive statistics

### 4.1. Source and sample

The econometric evaluation relies on data provided from the DARES (French Ministry of Labor and Solidarity), the FORCE dataset *(FORmation, sur le Chômage et l'Emploi)* and the regional information system Athéna 2 (region Grand Est dataset).[5] The data from the FORCE system corresponds to the 12th wave (2023_T2) and originates from the match of three administrative sources. The FHS (*Fichier historique des statistiques*) dataset is an administrative dataset produced by the French Employment Agency *Pôle Emploi*'; it provides us with variables related to socio-demographic characteristics and the professional journey of job seekers. The MMO( DMMO-EMMO ; *Déclarations sur les Mouvements de Main d'OEuvre - Enquête sur les Mouvements de Main d'OEuvre*) file is a survey produced by DARES; it reports information on all employment contracts held by individuals. The BREST (*Base REgionalisée des STagiaires de la formation professionnelle*) database identifies instances of individuals entering training under the professional training intern status. The IMILO (Information des MIssions LOcales) file provides insights into the support provided by *Missions Locales*.

These datasets were then matched with extracts from the regional information system Athéna 2, specifically the Regional Follow-up of Training and Insertion Actions. This system tracks each training organization based on its activities, target audience, contact information, and planned and executed courses. Additionally, it includes summaries of the actions taken by training organizations. The extracted data covers all training actions funded by the Grand-Est region between 2020 and 2022, enabling a comprehensive individual-level analysis with entry and follow-up data for each beneficiary.

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[5] These datasets were matched within the framework of the CASD (Center for Access to Data) to ensure the confidentiality and integrity of the information.

Within the Athéna 2 databases, observations without start or end dates for training were removed, as were those where the start date coincided with the end date. The control group encompasses individuals who entered training in 2020, 2021, or 2022, were neither employed throughout the period nor detained, undertook a full-time qualifying training within the Regional Training Program, did not undergo VAE (Validation of Acquired Experience) procedures, and had an entry-level education up to the High school certificate. Only full-time training is considered, and for each trainee, only their first training is included.

In the FORCE file, the main dataset used is MMO, documenting employment contracts signed by individuals. Contracts with end dates before the contract's start date were removed. In cases where the contract end date is absent, it is set to the last DSN (*Déclaration Sociale Nominative*) query date. Only contracts lasting more than 0 days are considered. Contracts occurring during training and duplicate jobs were removed. Overlapping job dates were adjusted. Only contracts lasting 30 days or more are considered. Contracts from the public industry were excluded since the DSN only incorporates public industry contracts from 01/01/2022. Additionally, only employment contracts where at least one month qualifies as employment according to BIT standards (at least one hour of work during a given week or absence under certain conditions such as annual leave, illness, maternity, for instance) were retained. Finally, only job seekers who could be tracked for at least 12 months after their training exit were included, *i.e.*, those who completed training before January 2022. To compute the length of employment contracts and wages, we selected the length of employment contracts and wages cumulatively at 3, 6 and 12 months after the end of training. Thus, if the individual has had several employment contracts during a given period, we take into account the totality of all salaries over this period.

After these operations, the evaluation sample consists of 12,131 individuals who benefit from training, including 128 trainees who benefited from IC (*Itinéraire Compétences*) program and 12,003 from regular regional training. A control group was formed by selecting only regular trainees who benefit from training in the same industries and departments as IC trainees. Individuals not residing in the same departments as IC trainees and whose training did not take place in the same industries as those proposed by IC were excluded. Those who benefit from multi-sectoral training in the Vosges department were also excluded. In the end, the sample used in the analysis comprises 1,763 job seekers who benefit from training, and their employment or unemployment paths can be tracked for up to 12 months after training exit. The treated group consists of 126 trainees who benefited from IC, and the control group consists of 1,637 trainees who benefit from regular training.

## 4.2. Descriptive Statistics

In this section, we provide descriptive statistics for these variables, systematically comparing them between two groups: beneficiaries of IC-labeled training and other trainees in the professional training domain in the region. We organize the presentation by distinguishing three sets of data to describe the trainees' profile (control variables for estimates), the nature of the training (treatment variables), and the employment and salary trajectories following training (outcome variables).

### 4.2.1. Trainees' Profile Before Entering Training

Several variables offer insights into the characteristics of trainees before the beginning of their training. These include gender, age, country of birth, education level upon entry, initial employment status, benefiting or not from *RSA* (*Revenu de Solidarité Active* or French social minimum income) status, disabled status (*Bénéficiaires de l'Obligation d'Emploi*, as a proxy), and residential location. Table 2 presents the tests of differences in proportions between the sample of individuals who benefited from IC labeled training and the group of trainees who benefit from the regular regional training. Only variables allowing frequency estimation due to statistical secrecy rules are utilized. To compare the two samples, we conducted Welch's tests.

Recipients of IC training, comprising one-fifth of them as *RSA* receipts, show a similar proportion to other vocational trainees. Their average age ranges from 34 to 35, aligning with other trainees. The percentage of residents in priority neighborhoods is 16.7% for IC and 17.4% for other trainees, with no significant difference. There is also no significant difference in the share of disabled workers, standing at 7.1% for IC trainees.

Before IC training, their employment-related metrics, including the employment rate (51.6%), average duration of previous employment contracts (461 days), and the number of previous contracts (1.06), show no significant differences compared to other vocational trainees.

Significant differences between the two samples are observed in four observable variables: gender, country of birth, education level, and type of employment contract before entering training. IC trainees are slightly less frequently female (57.9% vs. 67.2%), significantly so at a minimal significance level of 5%. They are more frequently born in France (84.1% vs. 74.6%), less frequently holding a High School Certificate (14.3% vs. 21.2%), and more frequently having a Vocational Certificate (45.2% vs. 36.4%).

**Table 1a.** Comparison of individual characteristics at the entry into training between individuals benefiting from *Itinéraire Compétences* (IC) program and those who benefit from a regular training.

| | Variable | Regular Training | IC Training | Difference (a) | P-value (c) |
|---|---|---|---|---|---|
| Gender | Share of women | 67,2 % | 57,9% | -9,30** | 4,35% |
| Age | Age at the beginning of the training | 34,49 | 34,58 | 0,09 [b] | 93,01% |
| Birthplace | France | 74,60% | 84,10% | 9,49*** | 0,65% |
| Status | French social minimum income (RSA) | 21,40% | 21,60% | -0,76 | 84% |
| | Non disabled worker | 85,50% | 82,50% | -2,91 | 40,75% |
| | Unknown disabled worker status | 9,00% | 10,30% | 1,33 | 63,63% |
| | Disabled worker | 5,50% | 7,10% | +1,64 | 48,99% |
| Residence | Priority urban district | 17,40% | 16,70% | -0,69 | 84,17% |
| Education level | High School Certificate | 21,2% | 14,3% | -6,92 | 3,69% |
| | Vocational Certificate | 36,40% | 45,20% | +8,81*** | 5,79% |
| | Middle School Certificate | 13,00% | 14,30% | +1,27 | 69,64% |
| | Without any diploma | 17,20% | 16,70% | -0,51 | 88,32% |
| Initial Employment Situation | Number of Previous Labor Contracts | 1,11 | 1,06 | -0,05 | 72,04% |
| | Employed | 52,30% | 51,60% | -0,73 | 87,42 % |
| | Average previous number of days worked[e] | 379,32 | 461,34 | 82,03 | 52,62 % |

*Sources:* FORCE (DARES, Pôle emploi), Athéna (Grand Est region), and authors' calculations.
*Scope*: 1,763 job seekers, including 126 who participated in the *"Itinéraire Compétences"* labeled training.
*Notes:* [a] Difference in percentage points between IC beneficiaries and other trainees in regular regional training. [b] In years. [c] Smallest probability of rejecting the null hypothesis of no statistical significance. [e] Number of days. *(respectively **; ***) indicates a significantly different gap at 0-10% (respectively 5%; 1%).

## 4.2.2. Differences in the organization of training

Regarding the training programs, we have information on the type of action (Permanent Entry and Exit (ESP), Session, Platform)[6], the professional industry (regional classification in 13 positions), the location in terms of municipality, employment area, living area, and employment zone. We also have details about the duration of the training (start and end dates), the type of provider, the cost of the training, the prerequisite level at entry, the targeted level upon completion, and the number of participants. Appendix 1, Table A1, presents the mean differences tests between IC beneficiaries and other trainees for all variables linked in our study to the training variable. Numerous significant differences emerge between IC beneficiaries and other trainees. Firstly, the duration of the training is generally slightly shorter (112 days on average compared to 160 days for other trainees). The entry year for training is earlier (2020 in 75.4% of cases, compared to 71.3% for other trainees excluding IC). The organization modalities of the training differ: IC trainings are more frequently organized in a blended format (combining in-person and distance learning) (51.6% vs. 9.8%) and less frequently in an exclusively in-person format (48.4% vs. 90.2%). Consistent with the organization of IC, the type of course is more often in "Permanent Entry and Exit" mode (54.8% vs. 1.0%) and less often in "Session" mode (29.4% vs. 77.5%).

The type of training is more frequently (44.0% vs. 0.0%) a professionalization action without any period of application in a company (PAE) and less often a qualifying training action (42.1% vs. 79.2%) or a professionalization action with a period of application in a company (9.5% vs. 17.8%). The targeted exit level is less frequently a level 3 (39.7% vs. 71.5%).

The industries covered by the trainings are not the same. IC-labeled trainings more often prepare for jobs in agriculture, viticulture, and landscaping (19.0% of individuals from IC compared to 17.8% for those from regular trainings), crafts, and artistic professions (9.5% of individuals from IC compared to 1.2% for others), trade (34.9% for individuals from IC vs. 10.5%), hospitality (19.8% for individuals from IC vs. 3.3%), catering and tourism, industry, mechanics, and maintenance (less than 5% of individuals from IC vs. 8.7%), multisectoral (6.3% for individuals from IC vs. 0.6%), and finally, service to individuals (8.7% of individuals from IC vs. 57.9%). However, they are non-existent in the construction, tertiary functions, transport and logistics, business services, and health sectors. The over-representation of certain sectors for IC beneficiaries is explained by the fact that the *Itinéraire Compétences* program targeted specific sectors.

Furthermore, IC beneficiaries are concentrated in a small number of territories, corresponding to the deployment territories of the program. From the perspective of their place of residence, IC beneficiaries are over-represented in Bas Rhin (67), which concentrates 33.3% of beneficiaries compared to 25.2% of professional training trainees, and in Meuse (55), which groups 27% of beneficiaries compared to 7.2% of other trainees.

### 4.2.3. Differences in employment and salary trajectories after training program

The third set of variables pertains to the employment and salary trajectories of individuals at the end of their training: employment status each month, the number of days between the end

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[6] In the context of training, when a program validates the "session" modality, entry and exit dates are fixed for a specific training session. In cases where it validates the "Permanent Entry and Exit" modality, the entry and exit dates are flexible for a specific training session. The third modality, "platform", corresponds to situations where entry and exit dates can be either fixed or flexible for various training sessions (for instance, a construction platform may have different arrangements for roofing and masonry sessions). It is in these latter two modalities that IC (*Itinéraire Compétences*) training programs predominantly fall.

of the training and the start of the new job (excluding individuals who have not found employment), nature of the contract (for the first job held one the training is over), number of days worked since the end of the training, overall labour earning measured by the base salary (amounts earned after 3, 6, and 12 months). These indicators provide the variables on which we aim to evaluate the effect of the *Itinéraire Compétences* through econometric analysis.

**Table 1b.** Comparison of variables related to employment outcomes between individuals benefiting from *Itinéraire Compétences* (IC) and those who have benefited from a regular training.

| Variable | Control | IC | Difference | p-value |
|---|---|---|---|---|
| Employed 3 months after training | 28.40% | 23.80% | -4.61 | 25% |
| Employed 6 months after training | 40.20% | 34.10% | -6.03 | 17% |
| Employed 12 months after training | 53.20% | 45.20% | -8.00* | 9% |
| Job search duration | 101.9 | 93.22 | -8.65 | 51% |
| % Open-ended contracts | 24.60% | 23.80% | -0.82 | 83% |
| % Fixed-term contracts | 30.00% | 26.20% | -3.82 | 35% |
| Number of days worked 3 months after training | 14.67 | 14.00 | -0.66 | 80% |
| Number of days worked 6 months after training | 40.08 | 35.27 | -4.81 | 39% |
| Number of days worked 12 months after training | 100.52 | 87.43 | -13.09 | 26% |
| Wage earnings3 months after training | 652 | 654 | 2.35 | 99% |
| Wage earnings6 months after training | 1,828 | 1,625 | -203.12 | 47% |
| Wage earnings12 months after training | 4,631 | 4,147 | -483.36 | 40% |

*Source:* FORCE (DARES, Pôle emploi), Athéna (région Grand Est), and authors' calculations.
*Scope:* 1,763 job seekers, including 126 who benefit from IC training.
*Notes:* [a]Difference in percentage points between IC beneficiaries and other trainees who benefit from alternative training.s. [b] Smallest probability of rejecting the null hypothesis of statistical non-significance. [c,d] Number of days. [e] Total number of employment days during the specified period. [f]Amounts in euros, total salaries received during the specified period. *(respectively **, ***) indicates a difference significantly different from 0 at 10% (respectively 5%, 1%).

The Table 1b presents tests for differences in proportions for these various variables. Nearly 24% of IC trainees are employed three months after completing their training, 34% after six months, and 45% after twelve months. Graph 1 provides details for each of the first twelve months after training completion. No difference in employment rates between IC trainees and others is significantly different from zero (except in month 7, with a negative difference of only 8.8%).

On average, IC trainees take 93 days (3 months) to find employment, compared to 108 days (3.5 months) for regular trainees. Again, this difference is not significant. Twelve months after training completion, the average number of days worked is 87 days, compared to 100 for other trainees (non-significant difference). There is also no significant difference at 5% or 10% in the percentage of open-ended or fixed-term contracts for cases where this information is specified.

There are differences in cumulative salaries favoring regular trainees, and these differences tend to increase over time (€4,147 vs. €4,630 twelve months after training completion; €1,625 vs.

€1,828 six months after the internship). However, they are never significantly different from zero.

**Figure 1.** Employment rate after completion of the training (IC or regular)
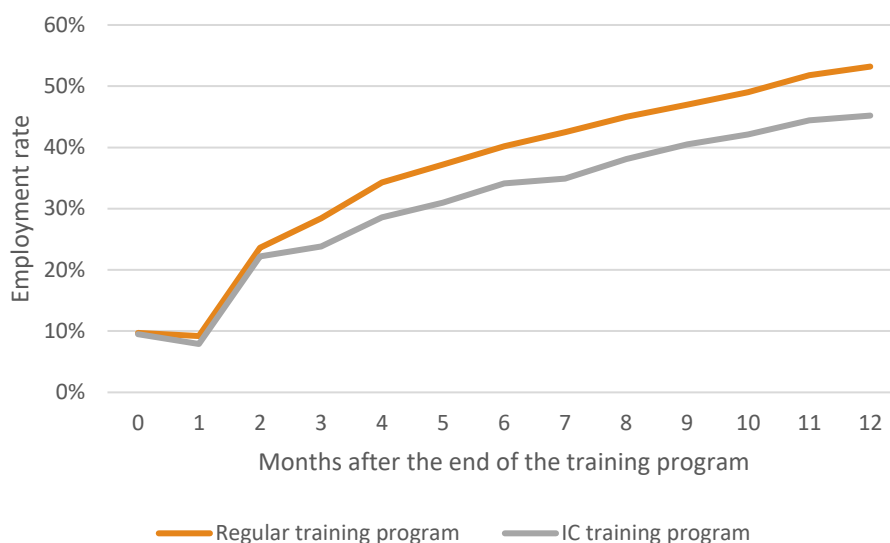
However, the lack of statistically significant differences from zero does not imply the absence of a differentiated effect of IC compared to regular training.

**Table 1c.** Employment outcomes for individuals benefiting from IC and those who benefit from a regular regional training. Qualification at entry: <u>no formal education</u>.

| Variable | Control | IC | Difference[a] | p-value[b] |
|---|---|---|---|---|
| Employed 3 months after training | 25.30% | 38.10% | 12.83 | 26% |
| Employed 6 months after training | 38.10% | 61.90% | 23.83** | 4.5% |
| Employed at 8 months | 43.10% | 66.70% | 23.61** | 4.2% |
| Employed at 10 months | 46.30% | 71.40% | 25.16** | 2.5% |
| Employed 12 months after training | 55.60% | 71.40% | 20.18* | 7% |
| | | | | |
| Job search duration[c] | 114.7 | 103.1 | -11.56 | 64% |
| | | | | |
| % Open-ended contracts | 18.10% | 38.10% | 19.94* | 8.6% |
| % Fixed-term contracts | 34.20% | 23.80% | -10.35 | 31% |
| | | | | |
| Number of days worked 3 months after training[d,e] | 12.37 | 19.29 | 7.02 | 33% |
| Number of days worked 6 months after training[d,e] | 40.08 | 34.23 | 22.15 | 16% |
| Number of days worked 12 months after training[d,e] | 83.35 | 149.71 | 66.36** | 3.6% |
| | | | | |
| Wage earnings received 3 months after training[f] | 505 | 910 | 405 | 26% |
| Wage earnings received 6 months after training[f] | 1,435 | 2,604 | 1,169 | 15% |
| Wage earnings received 12 months after training[f] | 3,475 | 7,487 | 4,012** | 1.8% |

Firstly, as emphasized in section 2, the employment outcomes may vary based on certain characteristics of job seekers, such as their gender or educational level at the entry into the training program. In this article, we focus on the educational level at the entry into the training program, considering four main qualification groups: no diploma, the *Brevet* (French middle school certificate), *CAP-BEP* (French vocational certificate), or the *Baccalauréat* (French high school certificate).

In the following, we concentrate on two extremes in terms of educational level: those without any diploma characterized by the lowest qualification and those holding a High School Certificate.

Among those without any diploma, Table 1c shows that individuals who benefit from the IC training exhibit a higher employment rate by 20 to 25 percentage points compared to those who followed a regular regional training program, starting from 6 months after the end of the training[7]. Regarding employment characteristics after the training, those without any diploma who benefit from IC training seem to be more likely (by 20 points) than others to have a permanent employment contract (with significance at 8.6%); this difference is observed between the 8th and 12th months after the training and increases over time (from 22 to 36 points, significance at 5%). Concerning fixed term contracts, no individual without any diploma who benefit from IC training is counted at any time horizon, except from the 8th month after the training completion: consequently, there is a negative gap between those without any diploma who benefit from IC training and others[8]. In fact, contracts held by those without any diploma who benefit from IC training are longer, up to 12 months after the training completion (over 150 days longer). Finally, for those without any diploma considered, there is also a positive salary gap in favor of those who benefit from IC training, which becomes significant between 6 and 12 months after the training completion (+4,012 euros, 12 months after the end of the training).

Conversely, among those with a High School Certificate (Table 1d), there seems to be no difference in employment rates between IC beneficiaries and those from regular regional training programs during the first 5 months after the training completion, similar to those without any diploma. However, from the 6th month onwards, individuals with a High School Certificate who benefited from IC are less frequently employed than others (by 25 percentage points, in months 11 and 12). Moreover, there do not appear to be significant differences in terms of permanent or temporary employment rates between IC and regular regional training programs. The same holds for salaries, regardless of the considered time horizon.

These observations also apply to those with a Vocational Certificate as their highest level of education at the entry into the training program. For those holding the Middle School Certificate, there are no significant differences[9].

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[7] These differences are sometimes significant only at 6-8%. However, it is essential to keep in mind that the corresponding sample sizes are relatively small.
[8] The gap is not reported due to statistical confidentiality (only 5 jobs are held on a temporary basis for those without a diploma who benefit from IC training).
[9] The tables are available upon request from the authors.

**Tableau 1d.** Return to employment between individuals benefiting from *Itinéraire Compétences* (IC) and those who have benefited from a regular training. <u>Entry qualification: High School Certificate.</u>

| Variable | Control | IC | Difference[a] | p-value[b] |
|---|---|---|---|---|
| Employed 3 months after training | 34.90% | 27.80% | -7.09 | 53% |
| Employed 6 months after training | 47.80% | 27.80% | -20.06* | 8.9% |
| Employed at 8 months | 52.40% | 27.80% | -24.67** | 4.0% |
| Employed at 10 months | 55.60% | 33.30% | -22.29* | 7.3% |
| Employed 12 months after training | 59.70% | 33.30% | -26.32** | 3.7% |
| | | | | |
| Job search duration[c] | 97.0 | 35.0 | -62.00* | 5.3% |
| | | | | |
| % Open-ended contracts | 28.80% | 27.80% | -1.04 | 92.6% |
| % Fixed-term contracts | 30.0% | SS | SS | 46% |
| | | | | |
| Number of days worked 3 months after training[d,e] | 17.09 | 20.50 | -9.09 | 68% |
| Number of days worked 6 months after training[d,e] | 49.81 | 40.72 | 22.15 | 61% |
| Number of days worked 12 months after training[d,e] | 120.41 | 81.33 | -39.08 | 26% |
| | | | | |
| Salaries received 3 months after training[f] | €729 | €1,036 | €307 | 50% |
| Salaries received 6 months after training[f] | €2,273 | €2,028 | -€244 | 79% |
| Salaries received 12 months after training[f] | €5,582 | €4,305 | -€1,277 | 46% |

*Source:* FORCE (DARES, Pôle emploi), Athéna (région Grand Est), and authors' calculations.
*Scope:* 1,763 job seekers, including 126 who benefit from IC training.
*Note:* [a]Difference in percentage points between IC beneficiaries and other trainees from alternative programs. [b]Smallest probability of rejecting the null hypothesis of no statistical significance. [c,d]Number of days. [e]Total number of employment days over the considered period. [f]Amount in euros, total salaries received over the considered period *(respectively **, ***) indicates a difference significantly different from 0 at 10% (respectively 5%, 1%).

In conclusion, no difference in employment outcomes seems to be detected at the level of all job seekers (JS), both in terms of employment status and characteristics, regardless of the time horizon considered. However, these findings mask heterogeneity based on the level of qualification achieved by job seekers before entering training, with less qualified individuals more frequently employed 6 to 12 months after training and holding longer contracts than more qualified individuals.

Nevertheless, regardless of the type of job seeker sample considered and whether the differences in outcome variables are significant or not, these disparities do not necessarily reflect an impact of IC. Since the two samples were not randomly selected, there are composition differences in both observable and unobservable variables that need to be neutralized. This is the focus of the estimates presented in the next section.

# 5. Evaluation method

### 5.1 Statistical Framework

To assess the impact of the *Itinéraire Compétences* (IC) program, we adopt a statistical framework derived from the literature on impact evaluation econometrics. This framework relies on the Rubin

Causal Model (Rubin, 1974). The outcome variables covered by the impact evaluation include employment status, duration of job search after the end of training, salary level, and type of contract.

To obtain the causal effect of going through IC (corresponding to the treatment variable, $T$) on outcome variables. $Y$. The individual effect is $Y_{1i}$-$Y_{0i}$ where $Y_{1i}$ and $Y_{0i}$ refer to the employment status of individual i (after the end of the training), respectively in the situation where they would have attended or not attended an IC-labeled training. Since each individual is observed in only one of the two situations (IC training or not), the individual effect remains unobserved. Thus, if we consider an individual who benefit from IC training, for whom $T_i=1$, we observe $Y_i=Y_{1i}$, but $Y_{0i}$ is unobserved.

Therefore, we seek to evaluate the Average Treatment Effect on the Treated (*ATET*)[10] :

$$ATET \equiv E(Y_{1i} - Y_{0i}|T_i = 1) = E(Y_{1i}|T_i = 1) - E(Y_{0i}|T_i = 1) \qquad (1)$$

If $Y$ refers to the individual's situation in the labor market after the IC training, an estimation of $E(Y_{1i}|T_i = 1)$ can be obtained by calculating the average of Y over the sample of IC trainees. This effect is identifiable if, for example, we assume that the employment situation in the absence of IC training ($Y_{0i}$) on average is the same as the trainee's employment situation ($T_i=1$) or not ($T_i=0$) of the IC training :

$$E(Y_{0i}|T_i = 1) = E(Y_{0i}|T_i = 0) = E(Y_{0i}) \qquad (2)$$

This means that $Y_{0i}$ does not depend on $T$, or in other words, trainees who have benefited from IC have the same characteristics on average as those in the group of individuals who have not undergone IC, implying that IC training was assigned to individuals randomly (controlled experiment).

This situation is unlikely in the case of IC training, as access to it was not random. Trainees who have benefited from IC differ from others in various observable characteristics $X$. In the previous section, we observed differences in birthplace, education level, location, industry sector, or distance to employment measured by the proportion of fixed-term contracts among those employed. In this case, a more "reasonable" identification assumption is to suppose that (2) holds for trainees with the same characteristics $X$:

$$E(Y_{0i}|T_i = 1, X_i) = E(Y_{0i}|T_i = 0, X_i) = E(Y_{0i}|X_i) \qquad (3)$$

(3) corresponds to conditional independence on characteristics X (cf., for example, Heckman *et al.*, 1997-1998), predetermined (i.e., observed before the implementation of IC; cf. Lee, 2004). It is implied by the independence of $Y_0$ to $T$ ($Y_{0i} \coprod T_i|X_i$).

As a result, *ATET* is identified as follows:

$$ATET = E(Y_{1i}|T_i = 1) - E_X[E(Y_{0i}|T_i = 1, X_i)|T_i = 1]$$

$$<=> \quad ATET = E(Y_{1i}|T_i = 1) - E_X[E(Y_{0i}|T_i = 0, X_i)|T_i = 1] \qquad (4)$$

Another aspect concerns the situation where the trainee does not benefit from IC. To quantify the average effect of IC, $T=0$ should correspond respectively to the situation where the individual does not undergo any training, and $Y_0$ to the potential outcome variable in the situation where the individual does not receive any other training. However, in our sample, individuals either undergo IC training or follow a regular regional training. Therefore, *ATET* here corresponds to the additional efficiency of IC training compared to regular regional training.

**4.2 Estimated Equations**

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[10] *ATET* is the effect that typically concerns the public policymaker first and foremost. However, it is also possible to examine the extent to which IC could be beneficial for an individual not undergoing IC training, assuming IC is also accessible to them (effect on non-beneficiaries, or *ATENT*, Lechner, 2004).

Conditioned on (3), which assumes that one can control for all X characteristics related to $T$ and $Y$, an estimator of $\widehat{ATET} = E(Y_{1\iota} - \widehat{Y_{0\iota}}|T_\iota = 1)$ is given by $\hat{\beta}$ obtained through ordinary least squares applied to the equation:

$$Y_i = \alpha + \beta T_i + \gamma X_i + \varepsilon_i \qquad (5)$$

Where $Y_i$ refers to the outcome variables considered in our analysis: being employed at months 0 to 12 after the end of the training; the number of months between the end of the training and the start of the new job; the duration of the contract of the job in recovery, as well as the type of labor contracts; the salary of the first job occupied after the end of the training. $X_i$ corresponds to the set of predetermined control variables correlated with both $Y$ and $T$. These are demographic characteristics (gender, age by group: less than 25 years, 25-49 years, and 50 years and older), country of birth, level of education at entry into IC, department of residence, labor market experience (having held a job before going through training), receiving RSA or a job obligation (*BOE*, refering to disabled workers), year of entry into training, type of remuneration received during training, and the training sector. T is the treatment (going through IC if *T=1*, through another training if *T=0*). $\varepsilon_i$ is the error term.

Equation (5) is estimated on our entire sample. The estimation of this equation covers all job seekers, on average, and does not allow for the study of differences in certain subpopulations. To address this limitation, we redo our estimates of equation (5) on sub-samples. In light of the literature on the effects of policies aimed at promoting return to employment, we consider in particular groups of job seekers according to their level of education at the entry into training.

## 6. Results and extensions

In this section, we present the results of our linear regression estimates. Next, we discuss the results based on the use of matching methods. Finally, we explore the possibility of heterogeneous effects, i.e., considering several subpopulations (by gender, age, or education at the entry into the program).

### 6.1. Overall sample

The initial observation focuses on the effects on employment (Table 2[11]).

No significant effect is detected on access to employment at any considered horizon after the end of the training, up to eleven months.

The only notable effect appears at the 12-month horizon, where going through IC would have reduced the probability of being employed by 11.8 percentage points compared to regular training (p-value of 3.7%). With this exception, overall and across all experiments, IC training would not have, on average, added value (or negative impact) in terms of access to employment compared to regular training.

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[11] Marginal effects of the full specification are given in Appendix (Table A2) for being employed at the end of training, or one to five months after. Tables for other outcome variables are available on request.

**Table 2.** The effect of IC training compared to a regular training on the employment outcomes of unemployed individuals who enter IC training.
Sample: all trained individuals.

| Variable | Estimation (a) | p-value (b) |
|---|---|---|
| Labor market status. Employed:[a] | | |
| At the end of the training | -0.0213 | 0.358 |
| One month after training | -0.0186 | 0.388 |
| Two months after training | -0.0310 | 0.479 |
| Three months after training | -0.0566 | 0.221 |
| Four months after training | -0.0718 | 0.149 |
| Five months after training | -0.0726 | 0.155 |
| Six months after training | -0.0659 | 0.210 |
| Seven months after training | -0.0867* | 0.099 |
| Eight months after training | -0.0810 | 0.131 |
| Nine months after training | -0.0787 | 0.149 |
| Ten months after training | -0.0894 | 0.105 |
| Eleven months after training | -0.0978* | 0.082 |
| Twelve months after training | -0.1177** | 0.037 |
| | | |
| Duration of job search[c] | -11.73 | 0.465 |
| | | |
| Employment characteristics: | | |
| Open-ended contracts [a] | 0.0129 | 0.792 |
| Fixed-term contracts [a] | -0.0721 | 0.108 |
| Number of days worked 3 months after training[d,e] | -2.96 | 0.351 |
| Number of days worked 6 months after training[d,e] | -6.96 | 0.302 |
| Number of days worked 12 months after training[d,e] | -14.70 | 0.273 |
| | | |
| Wage earnings 3 months after training[f] | -163 | 0.296 |
| Wage earnings 6 months after training[f] | -429 | 0.186 |
| Wage earnings 12 months after training[f] | -785 | 0.220 |

*Source :* FORCE (DARES, Pôle emploi), Athéna (région Grand Est), and authors' calculations.
*Scope :* 1,763 job seekers, including 126 who enter IC training.
*Note :* [a]Difference in percentage points between IC beneficiaries and other trainees from alternative programs. [b]Smallest probability of rejecting the null hypothesis of no statistical significance. [c,d]Number of days. [e]Total number of employment days over the considered period. [f]Amount in euros, total salaries received over the considered period *(respectively **, ***) indicates a difference significantly different from 0 at 10% (respectively 5%, 1%).

## 6.2 Heterogeneity: effects for different education levels

We do not detect any contribution of IC compared to the regular training on the overall employment outcomes of job seekers. However, in Section 4, we observed that the speed of returning to employment and the quality of jobs taken by individuals after IC training, relative to regular training, may depend on the education level of the individual before entering the training. This is the aspect we address in this subsection.

In Section 4, we found that among those without any diploma, individuals who benefit from IC training were more frequently employed than others starting from the 6th month after the completion of the training, unlike those with a Vocational Certificate or a High School Certificate. Similarly, employment characteristics after the completion of the training appeared

to be more favorable for those without diplomas who benefit from IC training than for those who benefit from regular training. In particular, 12 months after training, unemployed individuals without any diploma more frequently hold open-ended contracts and contracts of longer durations; considering the same timeframe, their accumulated salaries are higher. In contrast, for individuals with a vocational certificate, 12 months after training, the durations of contracts for the jobs held are more significant for those who benefit from IC training than for others; the same applies to salary gains.

**Table 3a**. Impact of IC training compared to a regular regional training on the employment outcomes of job seekers who enter IC training. Sample: job seekers without any diploma.

| Variable | Estimation | p-value[b] |
|---|---|---|
| Labor market status. Employed:[a] | | |
| At the end of the training | 0.0522 | 0.659 |
| One month after training | 0.1292 | 0.415 |
| Two months after training | 0.2038 | 0.298 |
| Three months after training | 0.2729 | 0.180 |
| Four months after training | 0.2090 | 0.258 |
| Five months after training | 0.2275 | 0.187 |
| Six months after training | 0.2607 | 0.104 |
| Seven months after training | 0.2015 | 0.214 |
| Eight months after training | 0.2538* | 0.089 |
| Nine months after training | 0.2470* | 0.099 |
| Ten months after training | 0.2865** | 0.041 |
| Eleven months after training | 0.2588* | 0.060 |
| Twelve months after training | 0.2088 | 0.152 |
| | | |
| Job Search Duration[c] | -49.66 | 0.129 |
| | | |
| Employment Characteristics: | | |
| Open-ended Contracts[a] | 0.1382 | 0.394 |
| Temporary Contracts[a] | -0.0806 | 0.523 |
| | | |
| Number of days worked 3 months after training[d,e] | 8.84 | 0.398 |
| Number of days worked 6 months after training[d,e] | 26.96 | 0.227 |
| Number of days worked 12 months after training[d,e] | 70,72* | 0,101 |
| | | |
| Wage earnings 3 months after training[f] | 349 | 0.467 |
| Wage earnings 6 months after training[f] | 982 | 0.330 |
| Wage earnings 12 months after training[f] | 3,425* | 0.064 |

*Sources:* FORCE (DARES, Pôle emploi), Athéna (région Grand Est) and authors' calculations.
*Scope:* 1,763 job seekers, including 126 who enter IC training.
*Notes:* [a]Difference in percentage points between IC beneficiaries and other trainees from alternative programs. [b]Smallest probability of rejecting the null hypothesis of no statistical significance. [c,d]Number of days. [e]Total number of employment days over the considered period. [f]Amount in euros, total salaries received over the considered period *(respectively **, ***) indicates a difference significantly different from 0 at 10% (respectively 5%, 1%).

Tables 3a and 3b contain the results of the coefficients of interest for individuals without any diploma (Table 3a) and those with a bachelor's degree (Table 3b).

Table 3a shows several elements suggesting that the effect of IC training is higher for less educated trainees. As for the return to employment, IC would have had a positive impact on individuals without any diploma at the entry into the training, increasing the probability of employment by 24.7 to 28.6 percentage points at 8 to 11 months after training and by 29 percentage points at 10 months after the end of the training. These magnitudes are statistically significant at the usual thresholds (4-6% at months 10-11, 10% otherwise), but they are obtained from small samples that weaken their precision.

**Table 3b.** Impact of IC training compared to a regular regional training on the employment outcomes of job seekers who enter IC training. Sample: job seekers holding a High School Certificate.

| Variable | Estimation[a] | p-value[b] |
|---|---|---|
| Labor market status. Employed: [a] | | |
| At the end of the training | -0.0154 | 0.852 |
| One month after training | -0.0424 | . |
| Two months after training | -0.1313 | 0.142 |
| Three months after training | -0.2216*** | 0.009 |
| Four months after training | -0.2962*** | 0.002 |
| Five months after training | -0.3281*** | 0.001 |
| Six months after training | -0.3392*** | 0.001 |
| Seven after training | -0.3722*** | 0.000 |
| Eight months after training | -0.4043*** | 0.000 |
| Nine months after training | -0.3349*** | 0.004 |
| Ten months after training | -0.3690*** | 0.002 |
| Eleven months after training | -0.3915*** | 0.001 |
| Twelve months after training | -0.3998*** | 0.001 |
| | | |
| Job Search Duration[c] | -56.22 | 0.145 |
| | | |
| Employment Characteristics: | | |
| Open-ended Contracts [a] | -0.0832 | 0.400 |
| Temporary Contracts [a] | -0.0059 | 0.963 |
| | | |
| Number of days worked 3 months after training[d,e] | -6.94 | 0.374 |
| Number of days worked 6 months after training[d,e] | -31.92** | 0.046 |
| Number of days worked 12 months after training[d,e] | -87.31*** | 0.000 |
| | | |
| Wage earnings 3 months after training[f] | -210 | 0.597 |
| Wage earnings 6 months after training[f] | -1°697** | 0.046 |
| Wage earnings 12 months after training[f] | -4°174*** | 0.002 |

*Sources:* FORCE (DARES, Pôle emploi), Athéna (région Grand Est) and authors' calculations.
*Scope:* 1,763 job seekers, including 126 who enter IC training.
*Notes:* [a]Difference in percentage points between IC beneficiaries and other trainees from alternative programs. [b]Smallest probability of rejecting the null hypothesis of no statistical significance. [c,d]Number of days. [e]Total number of employment days over the considered period. [f]Amount in euros, total salaries received over the considered period *(respectively **, ***) indicates a difference significantly different from 0 at 10% (respectively 5%, 1%).

In contrast (Table 3b), compared to individuals who benefit from common training, those who went through IC and held a bachelor's degree at the entry into training saw their probability of employment decrease by 22 to 40 percentage points at horizons ranging from 3 to 12 months after the end of training. The same decrease was observed for diploma holders, with a slightly

smaller reduction (15 to 20 percentage points at month 12). Finally, individuals holding a Vocational Certificate.

The lack of a significant overall effect on the entire sample seems to hide opposite effects depending on the initial education level, with less qualified individuals benefiting the most from IC. A similar observation can be made regarding the employment characteristics of trainees. We first observe that the null effect on salaries may reflect heterogeneity. Thus, depending on the education level at entry and at the 12-month horizon after the end of training, a positive impact on the salary is noted for individuals without any diploma, but a negative impact for those for whom the bachelor's degree is the maximum diploma level. Moreover, whether at 3, 6, or 12 months, the duration of the employment contract after training would be consistently lower for individuals with an initial diploma level equal to or higher than a bachelor's degree and who went through IC rather than common training.

Finally, concerning the type of employment contract after training, the impact of IC seems moderate. Trainees who benefit from IC and held a Vocational Certificate at the entry into training are more likely (+25 percentage points) to hold an open-ended contract in the first job following the end of training than trainees who benefit from common training. For individuals with a *BTS* diploma, the probability of being in a is, on the contrary, lower when going through IC than through another training; the opposite is true for the probability of being in a fixed-term contract.

### 6.3 Robustness: matching estimators

To test the robustness of these results, we conducted additional estimations using matching methods (Heckman *et al.*, 1998): propensity score matching on the nearest neighbors, Nadaraya-Watson kernel estimator (Dehejia and Wahba, 1999), and Mahalanobis distance (Rubin, 1980).

Indeed, certain limitations may arise from the estimations conducted based on equation (5). First, the estimation of this equation uses all elements of the control group to estimate the impact of IC, without considering the fact that, for some JS who went through IC, a counterfactual cannot be constructed (common support problem); similarly, not all JS who went through the regular regional training can be compared to those who went through IC. Second, the considered equation assumes a linear relationship between the outcome variable, the treatment, and the control variables, and the ordinary least squares estimator assumes that all individuals are comparable in terms of characteristics $X$.

In this article, we employ matching estimators based on propensity score (nearest neighbor or kernel; Rosenbaum and Rubin, 1983) and Mahalanobis distance (Rubin, 1980). The first two allow us to see the difference between two methods where the construction of the counterfactual assigns an identical weight (nearest neighbor) or not (kernel estimator) to each JS not undergoing *IC*. The third, more computationally demanding, enables us to adjust by directly matching on $X$ and avoiding any assumed functional form between $T$ and $X$. To calculate *ATET*, it is important to consider only treated individuals $i$ for whom it is possible to construct a counterfactual, *i.e.*, for whom the distance between $X_i$ and $X_j$ is not too large (common support restriction, Lechner, 2001)[12].

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[12] In order to interpret the results of the estimates obtained using matching estimators as IC effects, it is important to check that there are no remaining differences in $X$ between IC beneficiaries and other participants (balanced distribution of $X$ between treated and untreated). This is what we did following Rosenbaum and Rubin (1985) by conducting tests to verify the degree of balancing of $X$ characteristics between matched treated and untreated individuals.

The synthetic results provided by the nearest-neighbor propensity score matching estimators are reported in Table 4. We have considered the case of 1, 5 and 10 nearest neighbors.

Given the better quality of matching (more conclusive balancing tests) in the case of 5 or 10 nearest neighbors, we comment only on the results associated with these two cases. [13] These qualitatively confirm those of the linear regression estimates: no effect significantly different from zero on the employment rate, on the duration of job search, on the type of employment contract and on the level of remuneration.[14]

For robustness, we also applied nearest-neighbor propensity score matching methods to our sub-samples by education level.

Overall, despite relatively small samples, we find that IC seems to have benefited less the most highly educated, typically those with a High school certificate, and more individuals with no diploma, with the effects remaining in this case concerning the duration and salary of the job taken back after training.[15]

However, these methods should be considered with caution. Indeed, they often require a large number of observations to enable the best possible matching. In our case, the control sample includes 1,637 individuals who benefit from the regular training, while the processed sample only includes 126 IC trainees.

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[13] The full Rosenbaum and Rubin (1985)-type balancing tests are available in appendix (Table A4), as is the specification of the coefficients of the probit model estimated to get the propensity score (Table A3). The estimation results obtained by matching estimators on the kernel propensity score, as well as those completely non-parametric using a Mahalanobis distance, provide poorer results in terms of matching quality. They are therefore not diplayed.

[14] In view of our sample size, we used the analytical standard deviations given by Stata (psmatch2). However, similar results are obtained using a linear probability model in the first stage, with the standard deviations computed on 200 replications.

[15] Summary tables for all four diploma levels : No diploma; Middle School Certificate; Vocational Certificate; High School Certificate) are available on request. For higher level of education there were not enough individuals to provide estimates.

**Table 4.** The effect of IC training compared to a regular training on the employment outcomes of unemployed individuals who enter IC training. Matching estimator: 1, 5 or 10-nearest neighbors. Propensity score as a first step estimated through a probit model. Sample: all trained unemployed individuals.

| Variable | 1-NN Coefficient | 1-NN p-value (b) | 5-NN Coefficient | 5-NN p-value (b) | 10-NN Coefficient | 10-NN p-value (b) |
|---|---|---|---|---|---|---|
| Labor market status. Employed:[a] | | | | | | |
| At the end of the training | -0.0573 | -1.01 | -0.0262 | -0.62 | -0.0188 | -0.48 |
| | | | | | | |
| One month after training | -0.0409 | -0.87 | -0.0229 | -0.63 | -0.0163 | -0.47 |
| Two months after training | -0.0655 | -0.87 | -0.0442 | -0.78 | -0.0221 | -0.41 |
| Three months after training | -0.0655 | -0.84 | -0.0475 | -0.81 | -0.0229 | -0.42 |
| Four months after training | -0.0901 | -1.07 | -0.0639 | -1.04 | -0.0336 | -0.58 |
| Five months after training | -0.1147 | -1.31 | -0.0688 | -1.10 | -0.0409 | -0.69 |
| Six months after training | -0.1065 | -1.19 | -0.0508 | -0.80 | -0.0237 | -0.39 |
| Seven months after training | -0.1147 | -1.27 | -0.0704 | -1.09 | -0.037 | -0.62 |
| Eight months after training | -0.0819 | -0.90 | -0.0459 | -0.70 | -0.018 | -0.29 |
| Nine months after training | -0.0737 | -0.81 | -0.0426 | -0.65 | -0.015 | -0.25 |
| Ten months after training | -0.1147 | -1.24 | -0.0622 | -0.95 | -0.0401 | -0.64 |
| Eleven months after training | -0.1065 | -1.15 | -0.0606 | -0.92 | -0.0418 | -0.67 |
| Twelve months after training | -0.1229 | -1.33 | -0.1065 | -1.62 | -0.0778 | -1.24 |
| | | | | | | |
| Duration of job search[c] | -38.92 | -1.48 | -14.6 | -0.74 | -16.11 | -0.86 |
| | | | | | | |
| Characteristics of employment: | | | | | | |
|   Open-ended contracts [a] | -0.0573 | -0.70 | -0.0229 | -0.41 | -0.0024 | -0.05 |
|   Fixed-term contracts [a] | -0.0655 | -0.79 | -0.0295 | -0.49 | -0.0409 | -0.73 |
| Number of days worked 3 months after training[d,e] | -5.39 | -1.00 | -2.84 | -0.73 | -1.67 | -0.46 |
| Number of days worked 6 months after training[d,e] | -15.11 | -1.33 | -6.19 | -0.76 | -3.01 | -0.40 |
| Number of days worked 12 months after training[d,e] | -21.94 | -0.95 | -13.17 | -0.80 | -7.9 | -0.51 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Wage earnings 3 months after training[f] | -163 | -1.51 | -178 | -0.86 | -132 | -0.70 |
| Wage earnings 6 months after training[f] | -429 | -1.50 | -400 | -0.95 | -258 | -0.66 |
| Wage earnings 12 months after training[f] | -785 | -1.22 | -683 | -0.80 | -429 | -0.53 |
| | | | | | | |
| Common support (Nu. trainees on support). Nu. other trainees: 1637. | Yes (122) | | Yes (122) | | Yes (122) | |
| Balancing tests: summary (Unmatched/Matched) | U | M (% red) | U | M (% red) | U | M (%red) |
| LR Chi2 | 390.20 | 29.62 (92,4) | 390.20 | 11.03 (97,2) | 390.20 | 9.94 (97.2) |
| P>Chi2 | 0.000 | 0.433 | 0.000 | 1.000 | 0.000 | 1.000 |
| Mean Bias | 19.8 | 14.4 (23,3) | 19.8 | 5.9 (70,2) | 19.8 | 5.0 (74.7) |
| Med Bias | 16.4 | 10.1 (38.4) | 16.4 | 5.5 (66.4) | 16.4 | 4.3 (73.8) |
| B | 211.0* | 66.0* | 211.0* | 34.1* | 211.0* | 39.8* |
| R | 0.12* | 1.58 | 0.12* | 2.06* | 0.12* | 1.89 |

*Source :* FORCE (DARES, Pôle emploi), Athéna (région Grand Est), authors' calculations and tables A2-a to c on Appendix.

*Scope :* 1,763 job seekers, including 126 who enter IC training.

*Note :* [a]Difference in percentage points between IC beneficiaries and other trainees from alternative programs. [b]T-statistic (psmatch2:ratio ot-estimate to computed analytical standard error). [c,d]Number of days. [e]Total number of employment days over the considered period. [f]Amount in euros, total salaries received over the considered period *(respectively **, ***) indicates a difference significantly different from 0 at 10% (respectively 5%, 1%).

# 7. Conclusion

In this article, we examine vocational training as a potential means of returning to employment for the concerned job seekers. We focus on the "*Itinéraire Compétences*" program implemented in France between 2019 and 2022. "*Itinéraire Compétences*" is the label for new training programs experimented gradually in the French Grand Est region since 2019, anticipating the future organization that will prevail following the transformation of vocational training systems implemented as part of the PIC: entry diagnostics, modularization, skills-based approach, construction of seamless individualized pathways, work-based training, enhanced engagement of companies and local actors.

Our goal is to assess what this program brings in terms of labor market integration compared to existing mainstream training programs. To achieve this, we consider data that tracks the professional trajectories of 126 trainees from "*Itinéraire Compétences*" programs and compare them to those of a sample of 1,637 trainees from a regular training program. Using micro-econometric methods, we demonstrate that "*Itinéraire Compétences*" does not improve overall employment outcomes and their work conditions for all the job seekers considered. However, this result conceals heterogeneity in effects based on the education level of job seekers upon entry into the program. Thus, compared to regular training programs, "*Itinéraires Compétences*" would have benefited the less educated (individuals without any diploma level) but may have disadvantaged the educated individuals (people who hold a high school diploma). Therefore, targeting these programs toward those furthest from employment seems advisable.

However, these conclusions are based on estimates obtained from a small sample of "*Itinéraire Compétences*" trainees, which does not allow for a high degree of precision. Moreover, our evaluation focuses on training programs whose implementation was heavily disrupted by the health crisis, which could have impacted our results. Additionally, the data, sourced from administrative records designed for management rather than evaluation purposes, make it challenging for evaluators to fully control for composition effects.

# References

Bergemann, A. and G. Van den Berg (2008), "Active Labor Market Policy Effects for Women in Europe — A Survey", *Annales D'Économie Et De Statistique,* Vol. 91-92, pp. 385-408. doi : 10.2307/27917252.

Biewen, M., B. Fitzenberger, A. Osikominu and M. Paul (2014), "The Effectiveness of Public-Sponsored Training Revisited: The Importance of Data and Methodological Choices", *Journal of Labor Economics,* vol.*32,* No. 4, pp. 837-897. doi :10.1086/677233.

Blanden J., F. Buscha, P. Sturgis and P. Urwin (2012), "Measuring the returns to lifelong learning", *Economics of Education Review*, vol. 31, No. 4, pp. 501-514.

Bolvig I, P. Jensen and M. Rosholm (2003), "The Employment Effects of Active Social Policy", IZA Discussion Paper, No. 736.

Bonnal L., D. Fougère and A. Sérandon (1997), "Evaluation the Impact of French Employment. Policies on Individual Labor Market Histories", *Review of Economic Studies*, Vol. 64, No. 4, pp. 683-713.

Brodaty T., B. Crépon, and D. Fougère (2001), "Using Kernel Matching Estimators to Evaluate Alternative Youth Employment Programs: Evidence from France 1986-1988", in M. Lechner and F. Pfeiffer (Eds.), *Econometric Evaluations of Labour Market Policies*, Physica, Heidelberg, pp. 85-124.

Cahuc, P, S. Carcillo and A. Minea (2021), "The Difficult School-To-Work Transition of High School Dropouts: Evidence from a Field Experiment", *Journal of Human Resources*, Vol. 56, No. 1, pp 159-183.

Card D., J. Kluve and A. Weber (2018), "What Works? A Meta-Analysis of Recent Active Labor Market Program Evaluations", *Journal of the European Economic Association*, Vol. 16, No. 3, pp. 894-931. doi: 10.3386/w21431.

Cavaco S., D. Fougère and J. Pouget (2013), "Estimating the Effect of a Retraining Program on the Re-Employment Rate of Displaced Workers", *Empirical Economics*, Vol. 44, No. 1, pp. 261-287. doi: 10.1007/s00181-010-0391-6.

Crépon, B., M. Ferracci and D. Fougère (2012), "Training the Unemployed in France: How Does it Affect Unemployment Duration and Recurrence?", *Annals of Economics and Statistics,* No. 107-108, pp. 175-199. doi:10.2307/23646576.

Crépon, B., T. Le Barbanchon, H. Naegele, E. Pesonel, R. Rathelot and P. Zamora (2017), " Faut-il accompagner davantage les jeunes à la recherche d'un contrat d'apprentissage? Les enseignements de l'évaluation d'un programme expérimental", miméo.

Couch K. A. (1992), "New Evidence on the Long-Term Effects of Employment Training Programs", *Journal of Labor Economics*, Vol. 10; No. 4, pp. 380-388.

Dehejia, R. and S. Wahba (1999), "Causal Effects in Nonexperimental Studies: Reevaluating the Evaluation of Training Programs", *Journal of the American Statistical Association*, Vol. 94, pp. 1053-1062.

Fitzenberger B. and R. Volter (2007), "Long-run effects of training programs for the unemployed in east Germany", *Labour Economics*, Vol. 14, No/ 4, pp. 730-755.

Heckman J. , H. Ichimura and P. E. Todd (1998), "Matching as an econometric estimator : evidence from evaluating a job training program", *Review of Economic Studies*, Vol. 64, pp. 605-654.

Heckman, J.J., Lalonde, R.J. and Smith, J.A. (1999), "The Economics and Econometrics of Active Labor Market Programs", in Orley C. Ashenfelter, David Card, Handbook of Labor Economics, Chapter 31, Elsevier, Volume 3, Part A, 1999, Pages 1865-2097.

Hotz, V. J., G. W. Imbens and J. A. Klerman (2006), "Evaluating the Differential Effects of Alternative Welfare-to-Work Training Components: A Reanalysis of the California GAIN Program ", *Journal of Labor Economics*, Vol. 24, No. 3, pp. 521-566.

Lechner, M. (2008), "A Note on the Common Support Problem in Applied Evaluation Studies", *Annales d'économie et statistique*, n°91/92, Econometric Evaluation of Public Policies: Methods and Applications, pp. 217-235.

Lee, M.-J. (2004), *Micro-econometrics for policy, program and treatment effects*, Advanced Texts in Econometrics, Oxford University Press.

Morello, E., Hentzgen, C. and Cocuau, V (2022), " Comment la crise sanitaire a-t-elle affecté le nombre et le profil des demandeurs d'emploi de longue durée ? ", *Dares Analyses n°48.*

Osikominu A. (2013), "Quick job-entry or long-term human capital development? Dynamic effects of alternative training schemes", *Review of Economic Studies*, vol. 80, pp. 313-342.Rosenbaum P. et D. Rubin (1983), "The Central Role of the Propensity Score in Observational Studies for Causal Effects", *Biometrika*, Vol. 70, No. 1, pp. 41-55.

Rosenbaum P. and D. Rubin (1985), "Constructing a Control Group Using Multivariate Matched Sampling Methods That Incorporate the Propensity Score", *American Statistician*, Vol. 39, No. 1, pp. 33-38.

Rubin D. (1974), "Estimating causal effects of treatments in randomized and nonrandomized studies », *Journal of Educational Psychology*, Vol. 66, No. 5, pp. 688-701.

Rubin D. (1980), "Bias Reduction Using Mahalanobis-Metric Matching », *Biometrics*, Vol. 36, No. 2, pp. 293-298.

Welch, B. L, (1947), "The generalization of 'Student's' problem when several different population variances are involved », *Biometrika*, vol. 34, pp. 28-35.

# Appendices.

**Table A1.** Comparison of training characteristics between individuals who benefit from IC training and others who received regular regional training.

| Variables | Modalities | Regular training (1) | IC training (2) | Difference (2)-(1) | P-value [b] |
|---|---|---|---|---|---|
| Training duration | Days | 160.41 | 111.71 | -48.70*** | 0.00% |
| Year of entry in training | 2020 | 71.30% | 75.40% | +4.43*** | 27.13% |
| | 2021 | 29.00% | SS | SS | 19.04% |
| | 2022 | 0.00% | SS | SS | 31.92% |
| Type of training | Career paths | 2.90% | 4.00% | +1.03 | 56.55% |
| | Professionalization with company internship | 17.80% | 9.50% | -8.32*** | 0.33% |
| | Professionalization without company internship | 0.00% | 44.40% | +44.44*** | 0.00% |
| | Qualification | 79.20% | 42.10% | -37.15*** | 0.00% |
| Teaching method | Face-to-face | 90.20% | 48.40% | -41.75*** | 0.00% |
| | Face-to-face & distance learning | 9.80% | 51.60% | +41.75*** | 0.00% |
| Organization of the training | Permanent entry and exit | 1.00% | 54.80% | +53.78*** | 0.00% |
| | Platform | 21.50% | 15.90% | -5.64 | 10.13% |
| | Session | 77.50% | 29.40% | -48.14*** | 0.00% |
| Type of compensation during the training | General unemployment insurance benefit (*Pôle Emploi*) | 37.80% | 39.70% | +1.85 | 68.47% |
| | Other unemployment insurance | SS | SS | SS | 27.50% |
| | Regional compensation | 59.20% | 55.60% | -3.61 | 43.42% |
| | Without any training compensation | 0.7% | SS | SS | 94.17% |
| Highest diploma level | Master's or PhD degree | 2.00% | SS | SS | 15.97% |
| | Bachelor's or first year of master | 3.40% | SS | SS | 14.22% |
| | Business and technology education council | 6.80% | 7.10% | 0.36 | 88.10% |
| | High School Certificate | 20.20% | 14.30% | -6.92** | 3.69% |
| | Vocational Certificate | 36.40% | 45.20% | +8.81* | 5.79% |
| | Middle School Certificate | 13.00% | 14.30% | +1.26 | 69.64% |
| | Without any diploma | 17.20% | 16.70% | -0.51 | 88.32% |
| Certification results | Fully acquired | 52.80% | 46.80% | -5.92 | 20.27% |
| | Partially acquired | 6.50% | 13.50% | +7.01** | 2.60% |
| | Not acquired | 5.90% | SS | SS** | 1.78% |
| | No information | 34.80% | SS | SS | 58.40% |
| Training industry | Agriculture / Viticulture | 17.80% | 19.00% | +1.26 | 72.95% |
| | Craft | 1.20% | 9.50% | 8.36*** | 0.19% |
| | Trade | 10.50% | 34.90% | +24.41*** | 0.00% |
| | Hotel / Restaurant / Tourism | 3.30% | 19.80% | +16.54*** | 0.00% |

| | | | | | |
|---|---|---|---|---|---|
| | Manufacturing / Mechanical Enegineering / Maintenance | 8.70% | SS | SS*** | 0.00% |
| | Multi-Industry | 0.60% | 6.30% | +5.74*** | 0.98% |
| | Home care services | 57.90% | 8.70% | -49.45 | 0.00% |
| Targeted diploma | High School Certificate | 16.80% | 6.30% | -10.46*** | 0.00% |
| | Vocational Certificate | 71.50% | 39.70% | -31.83*** | 0.00% |
| | No information | 0.00% | SS | SS | 15.81% |
| | No diploma | 10.9% | 52.40% | +41.44*** | 0.00% |
| Individuals' department of residence | 51-Marne | 19.1% | 7.9% | +11.13%*** | 0.00% |
| | 52-Haute-Marne | 5.2% | SS | SS*** | 0.00% |
| | 54-Meurthe-et-Moselle | 10.7% | SS | SS*** | 0.00% |
| | 55-Meuse | 7.2% | 27.0% | -19.83%*** | 0.00% |
| | 57-Moselle | 12.0% | 12.7% | -0.72% | 81.63% |
| | 67-Bas-Rhin | 25.2% | 33.3% | -8.09%* | 6.51% |
| | 68-Haut-Rhin | 12.1% | 7.1% | +4.96%** | 4.38% |
| | 88-Vosges | 4.6% | 8.7% | -4.08% | 11.54% |
| | Outside Grand-Est region | 3.9% | SS | SS*** | 0.09% |

*Sources:* FORCE (DARES, Pôle emploi), Athéna (région Grand Est) and authors' calculations.

*Scope:* 1,763 job seekers, including 126 who enter IC training.

*Notes:* [a]Difference in percentage points between IC beneficiaries and other trainees from alternative programs. [b]Smallest probability of rejecting the null hypothesis of no statistical significance. [c,d]Number of days. [e]Total number of employment days over the considered period. [f]Amount in euros, total salaries received over the considered period. SS refers to statistical secret (not enough observatons). *(respectively **, ***) indicates a difference significantly different from 0 at 10% (respectively 5%, 1%).

**Table A2.** The effect of IC training compared to a regular training on the employment status of unemployed individuals who enter IC training. Probit. Marginal effects. *Part 1: employment status from the end of the training to five months after the end of training internship*.

<u>Sample: all individuals who benefit from a training, either the IC or the regular one.</u>

| Explanatory variables | Outcome variables. In employment: | At the end of the training | One month after training | Two months after training | Three months after training | Four months after training | Five months after training |
|---|---|---|---|---|---|---|---|
| Treatment: IC dummy | | -0.0213054 | -0.0186259 | -0.0310046 | -0.0565884 | -0.0718106 | -0.0726213 |
| | | (0.358) | (0.388) | (0.479) | (0.221) | (0.149) | (0.155) |
| Gender: | | | | | | | |
| Woman | | -0.0071343 | 0.0173412 | 0.0021937 | -0.0246712 | -0.0349281 | -0.0425136 |
| | | (0.661) | (0.244) | (0.937) | (0.412) | (0.273) | (0.190) |
| Man | | *Ref.* | *Ref.* | *Ref.* | *Ref.* | *Ref.* | *Ref.* |
| Age at the beginning of the training | | -0.0002268 | -0.0002630 | -0.0008003 | -0.0016079 | -0.0017050 | -0.0027050** |
| | | (0.696) | (0.616) | (0.417) | (0.132) | (0.135) | (0.020) |
| Birthplace : | | | | | | | |
| France | | 0.0147252 | -0.0057662 | 0.0164435 | 0.0163595 | -0.0266146 | -0.0297072 |
| | | (0.307) | (0.683) | (0.520) | (0.552) | (0.379) | (0.335) |
| Other countries | | *Ref.* | *Ref.* | *Ref.* | *Ref.* | *Ref.* | *Ref.* |
| Diploma level at the beginning of the training: | | | | | | | |
| Without any diploma | | 0.0067319 | -0.0134570 | -0.0081586 | -0.0032758 | -0.0103601 | -0.0120830 |
| | | (0.727) | (0.367) | (0.786) | (0.920) | (0.764) | (0.732) |
| Vocational Certificate | | *Ref.* | *Ref.* | *Ref.* | *Ref.* | *Ref.* | *Ref.* |
| Middle School Certificate | | 0.0103598 | -0.0012336 | -0.0081944 | -0.0311060 | -0.0668250* | -0.0585629 |
| | | (0.635) | (0.945) | (0.807) | (0.377) | (0.069) | (0.124) |
| High School Certificate | | 0.0124318 | 0.0150084 | 0.0317364 | 0.0621807* | 0.0683434** | 0.0777003** |
| | | (0.492) | (0.368) | (0.280) | (0.051) | (0.040) | (0.021) |
| Business and technology education council | | 0.0190881 | 0.0162266 | 0.0529698 | 0.0564853 | -0.0066087 | -0.0075165 |
| | | (0.517) | (0.532) | (0.266) | (0.257) | (0.895) | (0.884) |
| Bachelor's, master's or PhD degree | | -0.0194933 | -0.0341266* | -0.0698547* | -0.0820174* | -0.0973880* | -0.0956934* |
| | | (0.431) | (0.057) | (0.087) | (0.066) | (0.052) | (0.071) |
| French Social minimum income | | -0.0215887 | -0.0011863 | -0.0578476** | -0.0512378* | -0.0250357 | -0.0330245 |

| | | | | | | |
|---|---|---|---|---|---|---|
| (RSA) | | | | | | |
| | (0.156) | (0.936) | (0.024) | (0.066) | (0.413) | (0.289) |
| **Labor market experience:** | | | | | | |
| Having a job before training program | 0.0210143 | 0.0193637 | 0.0708642*** | 0.0881935*** | 0.1054894*** | 0.1134643*** |
| | (0.110) | (0.119) | (0.002) | (0.000) | (0.000) | (0.000) |
| Number of days employed before training | 0.0000056 | -0.0000000 | 0.0000006 | 0.0000089 | 0.0000173* | 0.0000203* |
| | (0.273) | (0.999) | (0.941) | (0.345) | (0.089) | (0.054) |
| **Disabled worker:** | | | | | | |
| Disabled | -0.0471885*** | -0.0131141 | -0.0434401 | -0.0805858* | -0.0693261 | -0.0463510 |
| | (0.005) | (0.549) | (0.281) | (0.052) | (0.144) | (0.353) |
| Non disabled worker | Ref. | Ref. | Ref. | Ref. | Ref. | Ref. |
| Unknown disabled status | -0.0367709* | 0.0229054 | -0.0516768 | -0.0605380 | -0.0487947 | -0.0258630 |
| | (0.059) | (0.432) | (0.210) | (0.175) | (0.322) | (0.617) |
| Residence: Priority Neighbourhoods under Urban Policy | -0.0223359 | -0.0078616 | -0.0157647 | -0.0001376 | -0.0043207 | -0.0015292 |
| | (0.153) | (0.593) | (0.576) | (0.996) | (0.893) | (0.963) |
| **Individuals' French department of residence:** | | | | | | |
| Department 51 | -0.1105887** | 0.9993107*** | -0.2694260*** | -0.3175297*** | -0.3631412*** | -0.2926865* |
| | (0.028) | (0.000) | (0.002) | (0.002) | (0.004) | (0.066) |
| Department 52 | -0.0789698*** | 0.9761951*** | -0.1905996** | -0.1958303 | -0.2279773 | -0.1094998 |
| | (0.000) | (0.000) | (0.014) | (0.106) | (0.137) | (0.610) |
| Department 54 | -0.0920810*** | 0.9919125*** | -0.2448703*** | -0.2943048*** | -0.3309006*** | -0.2788332** |
| | (0.001) | (0.000) | (0.000) | (0.000) | (0.001) | (0.045) |
| Department 55 | -0.0773833* | 0.9892982*** | -0.2077871*** | -0.2698852*** | -0.2822758** | -0.1798775 |
| | (0.052) | (0.000) | (0.008) | (0.000) | (0.026) | (0.340) |
| Department 57 | -0.1049103*** | 0.9953082*** | -0.2444884*** | -0.2833003*** | -0.3024079** | -0.2114667 |
| | (0.000) | (0.000) | (0.000) | (0.001) | (0.018) | (0.234) |
| Department 67 | -0.1255252* | 0.9999689*** | -0.2304719* | -0.3002369** | -0.3307854* | -0.2180958 |
| | (0.093) | (0.000) | (0.092) | (0.039) | (0.059) | (0.279) |
| Department 68 | -0.0826270* | 0.9952646*** | -0.1962040* | -0.2432882** | -0.2801065** | -0.1962621 |
| | (0.066) | (0.000) | (0.051) | (0.028) | (0.048) | (0.286) |
| Department 88 | -0.0809125*** | 0.9761711*** | -0.2100464*** | -0.2643212*** | -0.3006133*** | -0.2315508 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.112) |
| Outside Grand Est region | *Ref.* | *Ref.* | *Ref.* | *Ref.* | *Ref.* | *Ref.* |
| **Entry in the training program:** | | | | | | |
| in 2020 | 0.0015483 | 0.0282970** | 0.0516530** | 0.0674938** | 0.0698781** | 0.0831117*** |
| | (0.921) | (0.030) | (0.043) | (0.014) | (0.019) | (0.007) |
| in 2021 | *Ref.* | *Ref.* | *Ref.* | *Ref.* | *Ref.* | *Ref.* |
| **Type of training compensation** | | | | | | |
| General Unemployment Insurance benefit (French employment agency, *Pôle Emploi*) | 0.0208414 | 0.0226508 | 0.0418755* | 0.0310208 | 0.0393635 | 0.0388425 |
| | (0.172) | (0.113) | (0.100) | (0.254) | (0.177) | (0.193) |
| Regional training compensation | *Ref.* | *Ref.* | *Ref.* | *Ref.* | *Ref.* | *Ref.* |
| Other unemployment insurance | 0.0085571 | -0.0033365 | 0.0278071 | 0.0261369 | 0.0946663 | 0.0809605 |
| | (0.855) | (0.929) | (0.696) | (0.727) | (0.244) | (0.324) |
| Without any training compensation | 0.2792641** | | 0.1018179 | 0.1241057 | 0.0790488 | 0.1992205 |
| | (0.039) | | (0.454) | (0.380) | (0.582) | (0.165) |
| **Industry of the training** | | | | | | |
| Agriculture / Viticulture | -0.1178498** | 0.9988893*** | -0.3184794*** | -0.3808126*** | -0.4467078*** | -0.4306612*** |
| | (0.015) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Craft | -0.0893331*** | -0.0743485*** | -0.1998025*** | -0.2140327*** | -0.2662533*** | -0.1994499 |
| | (0.000) | (0.000) | (0.000) | (0.004) | (0.002) | (0.151) |
| Trade | -0.2222601*** | 0.9966733*** | -0.2578578*** | -0.3221629*** | -0.3068473* | -0.2460131 |
| | (0.000) | (0.000) | (0.001) | (0.000) | (0.052) | (0.250) |
| Hotel / Restaurant / Tourism | -0.1169681*** | 0.9587149*** | -0.3043716*** | -0.3621781*** | -0.2975881** | -0.2611801 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.010) | (0.145) |
| Manufacturing / Mechanical Engineering /Maintenance | -0.0937223*** | 0.9722130*** | -0.2552619*** | -0.3180628*** | -0.3677605*** | -0.3277059*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.005) |
| Multi-Industry | -0.0806295*** | 0.9393105*** | 0.7951473*** | 0.7506496*** | 0.6855702*** | 0.6562179*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Home care services | *Ref.* | *Ref.* | *Ref.* | *Ref.* | *Ref.* | *Ref.* |
| **Department*training industry** | | | | | | |
| Dep51* Agriculture / Viticulture / | 0.2607711* | -1.1066388*** | 0.5621324** | 0.6356039** | 0.7063405** | 0.6046970** |

| Landscape | | | | | | |
|---|---|---|---|---|---|---|
| | (0.099) | (0.000) | (0.022) | (0.019) | (0.018) | (0.030) |
| Dep57* Agriculture / Viticulture / Landscape | 0.2144908 | -1.0672044*** | 0.5572189** | 0.6042278** | 0.6075689** | 0.4980650* |
| | (0.178) | (0.000) | (0.021) | (0.023) | (0.039) | (0.069) |
| Dep67* Agriculture / Viticulture / Landscape | 0.2634133* | -1.1173505*** | 0.5401629** | 0.6425704** | 0.6868491** | 0.5446948** |
| | (0.089) | (0.000) | (0.023) | (0.015) | (0.018) | (0.044) |
| Dep68* Agriculture / Viticulture / Landscape | 0.1455728 | -1.1078106*** | 0.4592657* | 0.5245459** | 0.6080377** | 0.5176046* |
| | (0.352) | (0.000) | (0.056) | (0.048) | (0.038) | (0.058) |
| Dep67*Craft | 0.8617479*** | 0.5682010*** | 0.5562158** | 0.5277968** | 0.7439662*** | 0.5592153** |
| | (0.000) | (0.000) | (0.020) | (0.040) | (0.009) | (0.044) |
| Dep68*Craft | 0.7650097*** | 0.5184467*** | 0.3379887 | 0.2650733 | 0.2613021 | 0.0868421 |
| | (0.000) | (0.000) | (0.161) | (0.304) | (0.354) | (0.751) |
| Dep51*Trade | 0.8206784*** | -1.2421456*** | 0.4968666* | 0.6065072* | 0.5122136 | 0.3627926 |
| | (0.000) | (0.000) | (0.081) | (0.057) | (0.128) | (0.260) |
| Dep52*Trade | 0.7901012*** | -1.3176290*** | 0.3149799 | 0.3121648 | 0.2770059 | 0.1348892 |
| | (0.000) | (0.000) | (0.286) | (0.343) | (0.425) | (0.686) |
| Dep55*Trade | 0.7242216*** | -1.2290967*** | 0.3292335 | 0.4731092 | 0.3161670 | 0.1820899 |
| | (0.000) | (0.000) | (0.255) | (0.145) | (0.355) | (0.579) |
| Dep67*Hotel / Restaurant / Tourism | 0.8088794*** | -0.6630063*** | 1.6749782*** | 1.9622855*** | 0.4378264 | 0.2961598 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.213) | (0.384) |
| Dep67*Manufacturing / Mechanical engineering / Maintenance | 0.2222894 | -0.6755834*** | 0.4375134* | 0.5789440** | 0.5636445* | 0.3689055 |
| | (0.171) | (0.000) | (0.084) | (0.041) | (0.065) | (0.190) |
| Dep57*Multi-Industry | 0.9280593*** | -0.6651001*** | -1.3718107*** | -1.4916957*** | -1.5465645*** | -1.5980391*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Dep54*Multi-Industry | | | -1.5818809*** | -1.7941294*** | -1.9014926*** | -1.9316283*** |
| | | | (0.000) | (0.000) | (0.000) | (0.000) |
| Observations | 1,756 | 1,743 | 1,762 | 1,762 | 1,762 | 1,762 |

*Sources:* FORCE (DARES, Pôle emploi), Athéna (région Grand Est) and authors' calculations.

*Scope:* 1,763 job seekers, including 126 who enter IC training.

*Notes:* [a]Difference in percentage points between IC beneficiaries and other trainees from alternative programs. [b]Smallest probability of rejecting the null hypothesis of no statistical significance. [c,d]Number of days. [e]Total number of employment days over the considered period. [f]Amount in euros, total salaries received over the considered period *(respectively **, ***) indicates a difference significantly different from 0 at 10% (respectively 5%, 1%).

**Table A3.** The effect of IC training compared to a regular training on the employment outcomes of unemployed individuals who enter IC training. Matching estimator: 10-nearest neighbors. **First step: propensity score estimates – linear probability model**. Sample: all trained unemployed individuals.

| Control variables | Coefficient | Standard error | T-statistics[a] | P>z[b] | [95% Confidence Interval] | |
|---|---|---|---|---|---|---|
| Woman | …0.0163 | .01428 | 1.15 | 0.252 | -.0116 | .0443 |
| Age at the entry in the training | 0.0013*** | .0005 | 2.57 | 0.010 | .0003 | .0023 |
| Country of birth: France | 0.0155 | .0138 | 1.13 | 0.260 | -.0115 | .0426 |
| Without any diploma | -0.0225 | .0160 | -1.41 | 0.160 | -.0540 | .0088 |
| Middle School Certificate | -0.0113 | .0176 | -0.64 | 0.520 | -.0460 | .0232 |
| High School Certificate | -0.0416*** | .0176 | -2.79 | 0.005 | -.0709 | -.0123 |
| Business and technology education council | -0.0353 | .0227 | -1.55 | 0.120 | -.0799 | .0092 |
| Bachelor's, master's or doctorate degree | -0.0979*** | .0265 | -3.68 | 0.000 | -.1500 | -.0457 |
| French Social minimum income (RSA) | -0.0029 | .0142 | -0.21 | 0.837 | -.0308 | .0249 |
| Having a job before training program | -0.0087 | .0122 | -0.71 | 0.478 | -.0327 | .0153 |
| Number of days employed before training | -7.6e-08 | 4.8e-06 | -0.02 | 0.988 | -9.5e-06 | 9.4e-06 |
| Disabled | -0.0220 | .0240 | -0.92 | 0.359 | -.0691 | .0251 |
| Unknown disabled status | 0.0567** | .0230 | 2.47 | 0.014 | .0116 | .1018 |
| Priority urban district | 0.0037 | .0148 | 0.25 | 0.801 | -.0253 | .0328 |
| Department 51 | -0.1410 | .0915 | -1.54 | 0.124 | -.3205 | .0384 |
| Department 52 | -0.1468 | .0955 | -1.54 | 0.125 | -.3342 | .0405 |
| Department 54 | -0.1294 | .0914 | -1.42 | 0.157 | -.3087 | .0498 |
| Department 55 | -0.1493 | .0941 | -1.59 | 0.113 | -.3340 | .0353 |
| Department 57 | -0.1382 | .0916 | -1.51 | 0.132 | -.3179 | .0415 |
| Department 67 | -0.1349 | .0918 | -1.47 | 0.142 | -.3150 | .0451 |
| Department 68 | -0.1421 | .0921 | -1.54 | 0.123 | -.3227 | .0385 |
| Department 88 | -0.0236 | .0891 | -0.27 | 0.791 | --.1986 | .1512 |
| Entry in the training program in 2020 | 0.0525*** | .0141 | 3.73 | 0.000 | .0249 | .0802 |
| General unemployment insurance | -0.0015 | .0135 | -0.11 | 0.909 | -.0281 | .0250 |
| Other unemployment insurance | 0.0409 | .0364 | 1.13 | 0.261 | -.0304 | .1123 |
| Without any | 0.0198 | .0631 | 0.31 | 0.754 | -.1039 | .1436 |

| | | | | | | |
|---|---|---|---|---|---|---|
| unemployment insurance | | | | | | |
| Agriculture / Viticulture / Landscape | -0.0904 | .1001 | -0.90 | 0.366 | -.2868 | .1058 |
| Craft / Trades of art | -0.0349 | .0818 | -0.43 | 0.669 | -.1954 | .1254 |
| Trade | -0.1356 | .1336 | -1.02 | 0.310 | -.3977 | .1264 |
| Hotel / Restaurant / Tourism | -0.1015 | .1340 | -0.76 | 0.449 | -.3645 | .1613 |
| Manufacturing / Mechanical Engineering /Maintenance | -0.1113 | .1100 | -1.01 | 0.312 | -.3272 | .1044 |
| Multi-Industry | -0.0488 | .1638 | -0.30 | 0.766 | -.3701 | .2725 |
| Dep51* Agriculture / Viticulture / Landscape | 0.1439 | .1076 | 1.34 | 0.182 | -.0672 | .3551 |
| Dep57* Agriculture / Viticulture / Landscape | 0.3113*** | .1052 | 2.96 | 0.003 | .1049 | .5176 |
| Dep67* Agriculture / Viticulture / Landscape | 0.2089** | .1031 | 2.03 | 0.043 | .0065 | .4112 |
| Dep68* Agriculture / Viticulture / Landscape | 0.1251 | .1048 | 1.19 | 0.233 | -.0806 | .3308 |
| Dep67*Craft / Trades of art | 0.6362*** | .1182 | 5.38 | 0.000 | .4043 | .8681 |
| Dep68*Craft / Trades of art | 0.8954*** | .1157 | 7.74 | 0.000 | .6684 | 1.1225 |
| Dep51*Trade | 0.2564* | .1364 | 1.88 | 0.060 | -.0112 | .5241 |
| Dep52*Trade | 0.1901 | .1420 | 1.34 | 0.181 | -.0885 | .4688 |
| Dep55* Trade | 0.5608*** | .1385 | 4.05 | 0.000 | .2891 | .8325 |
| Dep67* Hotel / Restaurant / Tourism | 0.4732*** | .1375 | 3.44 | 0.001 | .2035 | .7430 |
| dep67* Manufacturing / Mechanical Engineering /Maintenance | 0.1332 | .1129 | 1.18 | 0.238 | -.0883 | .3547 |
| Dep54*Multi-Industry | 0.3879** | .1873 | 2.07 | 0.038 | .0205 | .7553 |
| Dep57*Multi-Industry | 0.6736*** | .1784 | 3.78 | 0.000 | .3236 | 1.0237 |
| Intercept | 0.0451 | .0945 | 0.48 | 0.633 | -.1402 | .2305 |

**Table A4.** The effect of IC training compared to a regular training on the employment outcomes of unemployed individuals who enter IC training. <u>Matching estimator: 5-nearest neighbors</u>. **First step: propensity score estimates – balancing tests**. <u>Sample: all trained unemployed individuals.</u>

| Indicator | Mean | | | %Reduct | T-test | |
|---|---|---|---|---|---|---|
| Variable | Treated | Control | %bias | bias | t | p>t |
| Woman | | | | | | |
| U | 0.579 | 0.672 | -19.300 | | -2.130 | 0.033 |
| M | 0.566 | 0.554 | 2.4 | 87.700 | 0.180 | 0.857 |
| Age at the entry in the training | | | | | | |
| U | 34.579 | 34.489 | 0.8 | | 0.090 | 0.931 |
| M | 34.270 | 33.302 | 8.6 | -972.100 | 0.650 | 0.516 |
| Country of birth France | | | | | | |
| U | 0.841 | 0.746 | 23.600 | | 2.380 | 0.017 |
| M | 0.844 | 0.848 | -0.800 | 96.500 | -0.070 | 0.944 |
| Without any diploma   U | 0.167 | 0.172 | -1.400 | | -0.150 | 0.884 |
| M | 0.172 | 0.148 | 6.5 | -382.800 | 0.520 | 0.602 |
| Middle School Certificate | 0.143 | 0.130 | 3.7 | | 0.410 | 0.685 |
| M | 0.148 | 0.156 | -2.400 | 35.300 | -0.180 | 0.859 |
| High School Certificate    U | 0.143 | 0.212 | -18.200 | | -1.850 | 0.065 |
| M | 0.148 | 0.159 | -3.000 | 83.400 | -0.250 | 0.805 |
| Business and technology education council | | | | | | |
| U | 0.071 | 0.068 | 1.4 | | 0.150 | 0.878 |
| M | 0.074 | 0.077 | -1.300 | 8.4 | -0.100 | 0.923 |
| Bachelor's, master's or doctorate degree | | | | | | |
| U | 0.024 | 0.054 | -15.500 | | -1.470 | 0.143 |
| M | 0.025 | 0.031 | -3.400 | 78.100 | -0.310 | 0.757 |
| French Social minimum income (RSA) | | | | | | |
| U | 0.206 | 0.214 | -1.900 | | -0.200 | 0.841 |
| M | 0.197 | 0.174 | 5.6 | -202.500 | 0.460 | 0.646 |
| Having a job before training program | | | | | | |
| U | 0.516 | 0.523 | -1.500 | | -0.160 | 0.874 |
| M | 0.508 | 0.541 | -6.500 | -345.800 | -0.510 | 0.610 |
| Number of days employed before | | | | | | |

| Variable | | | | | | | |
|---|---|---|---|---|---|---|---|
| training | U | 461.340 | 379.320 | 6.3 | | 0.740 | 0.457 |
| | M | 455.170 | 353.910 | 7.8 | -23.400 | 0.660 | 0.513 |
| BOE status | | | | | | | |
| | U | 0.071 | 0.055 | 6.7 | | 0.770 | 0.441 |
| | M | 0.074 | 0.074 | 0.0 | 100.000 | 0.000 | 1.000 |
| Unknown BOE status | U | 0.103 | 0.090 | 4.5 | | 0.500 | 0.616 |
| | M | 0.074 | 0.067 | 2.2 | 50.800 | 0.200 | 0.842 |
| Priority urban district | | | | | | | |
| | U | 0.167 | 0.174 | -1.800 | | -0.200 | 0.843 |
| | M | 0.164 | 0.120 | 11.800 | -538.900 | 0.990 | 0.324 |
| Department 51 | | | | | | | |
| | U | 0.079 | 0.191 | -33.000 | | -3.120 | 0.002 |
| | M | 0.082 | 0.070 | 3.4 | 89.700 | 0.340 | 0.737 |
| Department 52 | | | | | | | |
| | U | 0.008 | 0.052 | -26.000 | | -2.210 | 0.027 |
| | M | 0.008 | 0.002 | 3.9 | 85.100 | 0.730 | 0.466 |
| Department 54 | | | | | | | |
| | U | 0.016 | 0.107 | -38.600 | | -3.290 | 0.001 |
| | M | 0.016 | 0.031 | -6.300 | 83.800 | -0.750 | 0.451 |
| Department 55 | | | | | | | |
| | U | 0.270 | 0.072 | 54.500 | | 7.790 | 0.000 |
| | M | 0.279 | 0.270 | 2.3 | 95.900 | 0.140 | 0.887 |
| Department 57 | | | | | | | |
| | U | 0.127 | 0.120 | 2.2 | | 0.240 | 0.811 |
| | M | 0.131 | 0.108 | 7.0 | -219.700 | 0.550 | 0.583 |
| Department 67 | | | | | | | |
| | U | 0.333 | 0.252 | 17.800 | | 2.000 | 0.046 |
| | M | 0.344 | 0.390 | -10.100 | 43.300 | -0.740 | 0.459 |
| Department 68 | | | | | | | |
| | U | 0.071 | 0.121 | -16.800 | | -1.670 | 0.096 |
| | M | 0.041 | 0.026 | 5.0 | 70.300 | 0.640 | 0.525 |
| Department 88 | | | | | | | |
| | U | 0.087 | 0.046 | 16.400 | | 2.040 | 0.041 |
| | M | 0.090 | 0.098 | -3.300 | 79.900 | -0.220 | 0.827 |
| Entry in the training program in 2020 | U | 0.754 | 0.710 | 10.000 | | 1.060 | 0.290 |
| | M | 0.779 | 0.785 | -1.500 | 85.200 | -0.120 | 0.902 |
| General unemployment insurance | | | | | | | |
| | U | 0.397 | 0.378 | 3.8 | | 0.410 | 0.681 |

| | | | | | | |
|---|---|---|---|---|---|---|
| M | 0.402 | 0.372 | 6.0 | -59.800 | 0.470 | 0.638 |
| Other unemployment insurance U | 0.040 | 0.023 | 9.8 | | 1.210 | 0.226 |
| M | 0.025 | 0.039 | -8.500 | 13.500 | -0.650 | 0.514 |
| Without any unemployment insurance U | 0.008 | 0.007 | 0.7 | | 0.080 | 0.939 |
| M | 0.008 | 0.003 | 5.6 | -717.600 | 0.510 | 0.613 |
| Agriculture / Viticulture / Landscape U | 0.190 | 0.178 | 3.2 | | 0.360 | 0.722 |
| M | 0.197 | 0.175 | 5.5 | -69.100 | 0.430 | 0.670 |
| Craft / Trades of art U | 0.095 | 0.012 | 37.700 | | 6.970 | 0.000 |
| M | 0.066 | 0.049 | 7.4 | 80.400 | 0.550 | 0.584 |
| Trade U | 0.349 | 0.105 | 60.700 | | 8.200 | 0.000 |
| M | 0.361 | 0.330 | 7.7 | 87.200 | 0.510 | 0.611 |
| Hotel / Restaurant / Tourism U | 0.198 | 0.033 | 53.300 | | 8.830 | 0.000 |
| M | 0.205 | 0.252 | -15.300 | 71.300 | -0.880 | 0.379 |
| Manufacturing / Mechanical engineering / Maintenance U | 0.016 | 0.087 | -32.700 | | -2.820 | 0.005 |
| M | 0.016 | 0.025 | -3.700 | 88.500 | -0.450 | 0.653 |
| Multi-industry U | 0.063 | 0.006 | 31.600 | | 6.240 | 0.000 |
| M | 0.066 | 0.067 | -0.900 | 97.100 | -0.050 | 0.959 |
| Dep51* Agriculture / Viticulture / Landscape U | 0.008 | 0.020 | -10.000 | | -0.930 | 0.354 |
| M | 0.008 | 0.013 | -4.200 | 57.700 | -0.370 | 0.710 |
| Dep57* Agriculture / Viticulture / Landscape U | 0.079 | 0.026 | 24.200 | | 3.440 | 0.001 |
| M | 0.082 | 0.072 | 4.4 | 81.700 | 0.290 | 0.774 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Dep67* Agriculture / Viticulture / Landscape | | | | | | |
| U | 0.087 | 0.070 | 6.3 | | 0.710 | 0.476 |
| M | 0.090 | 0.069 | 7.9 | -25.300 | 0.610 | 0.540 |
| Dep68* Agriculture / Viticulture / Landscape | | | | | | |
| U | 0.016 | 0.045 | -16.800 | | -1.540 | 0.124 |
| M | 0.016 | 0.021 | -2.900 | 82.900 | -0.280 | 0.779 |
| Dep67* Craft / Trades of art U | 0.032 | 0.002 | 23.400 | | 5.180 | 0.000 |
| M | 0.033 | 0.044 | -9.000 | 61.600 | -0.460 | 0.643 |
| Dep68* Craft / Trades of art | | | | | | |
| U | 0.056 | 0.001 | 33.600 | | 9.040 | 0.000 |
| M | 0.025 | 0.005 | 12.000 | 64.200 | 1.270 | 0.204 |
| Dep51*Trade | | | | | | |
| U | 0.071 | 0.048 | 9.69 | | 1.150 | 0.251 |
| M | 0.074 | 0.057 | 6.9 | 29.200 | 0.520 | 0.607 |
| Dep52*Trade | | | | | | |
| U | 0.008 | 0.023 | -12.400 | | -1.120 | 0.261 |
| M | 0.008 | 0.002 | 5.3 | 57.100 | 0.730 | 0.466 |
| Dep55*Trade U | | | | | | |
| | 0.270 | 0.031 | 70.800 | | 12.680 | 0.000 |
| M | 0.279 | 0.270 | 2.4 | 96.600 | 0.140 | 0.887 |
| Dep67*Hotel / Restaurant / Tourism U | 0.198 | 0.030 | 54.700 | | 9.300 | 0.000 |
| M | 0.205 | 0.252 | -15.400 | 71.800 | -0.880 | 0.379 |
| Dep67* Manufacturing / Mechanical engineering / Maintenance   U | 0.016 | 0.079 | -30.200 | | -2.620 | 0.009 |
| M | 0.016 | 0.025 | -3.900 | 87.100 | -0.450 | 0.653 |
| Dep54* Multi-industry | | | | | | |
| U | 0.016 | 0.002 | 14.100 | | 2.500 | 0.013 |
| M | 0.016 | 0.031 | -15.500 | -9.900 | -0.750 | 0.451 |
| Dep57* Multi-industry | | | | | | |
| U | 0.048 | 0.002 | 29.100 | | 6.580 | 0.000 |

| | 0.049 | 0.036 | 8.5 | 71.000 | 0.510 | 0.614 |
|---|---|---|---|---|---|---|
| M | | | | | | |

| Sample | Ps R2 | LR chi2 | P>chi2 | MeanBias | Median Bias | B | R |
|---|---|---|---|---|---|---|---|
| Unmatched | 0.430 | 390.200 | 0.000 | 19.800 | 16.400 | 211.0* | 0.12* |
| Matched | 0.033 | 11.030 | 1.000 | 5.9 | 5.5 | 34.1* | 2.06* |

* if B>25%, R outside [0.5; 2]

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