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**The association of substance use with attaining employment among unemployed job seeking adults: Prospective findings from the French CONSTANCES cohort.**

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## Abstract

This study aimed to examine the prospective association between tobacco, alcohol and cannabis use with attaining employment among unemployed job seekers. Data from the French population-based CONSTANCES cohort on 5,114 unemployed job seeking adults enrolled from 2012 to 2018 were analyzed. Binary logistic regressions were computed. Odds ratio (OR) and 95%CI of remaining unemployed at one-year of follow-up (versus attaining employment) according to substance use at baseline were obtained. The following independent variables were introduced into separate models: tobacco use (non-smoker, former smoker, light(<10cig/day), moderate(10-19cig/day) and heavy smoker(>19cig/day)), alcohol use according to the Alcohol Use Disorder Identification Test (non-users(0), low(<7), moderate(7-15) and high or very high-risk(>15)) and cannabis use (never used, no use in the previous 12 months, less than once a month, at least once a month but less than once per week, once per week or more). Analyses were adjusted for age, gender and education. At follow-up, 2,490 participants (49.7%) were still unemployed. Compared to non-smokers, moderate and heavy smokers were more likely to remain unemployed, with ORs (95%CI) of 1.33 (1.08-1.64) and 1.42 (1.04-1.93), respectively. Compared to low-risk alcohol users, no alcohol users and high or very high-risk alcohol users were more likely to remain unemployed, with ORs (95% CI) of 1.40 (1.03-1.83) and 2.10 (1.53-2.87), respectively. Compared to participants who never used cannabis, participants who use cannabis once a week or more were more likely to remain unemployed, OR (95%CI) of 1.63 (1.33-2.01). Substance use may play an important role in difficulty attaining employment.

Keywords: Tobacco use; Alcohol use; Cannabis use; Employment.

## Introduction

Substance use is one of the most important risk factors for adult mortality and morbidity in the world (1). Besides many adverse consequences on physical and mental health, substance use is also negatively linked to educational achievements and positively with poverty and social deprivation (2,3). From a public health perspective, these detrimental consequences are driven by the most frequently consumed substances: tobacco, alcohol and cannabis (1,4,5). France has one of the highest rates of tobacco and cannabis use among Western European countries, and in 2017, at least 23% of the French general population exceeded the recommended maximum amounts for alcohol consumption (6–8). On the other hand,

70 according to the International Labor Organization, unemployment is a worldwide crisis  
71 aggravated by the COVID-19 pandemic and its rate is expected to rise to 5.7% in 2022 (9). In  
72 France, unemployment rate was roughly stable in the 10 years prior to the Covid-19 global  
73 crisis, i.e., from 8.9% in 2010 to 7.8% in 2020 (10). Age, gender, and education remained  
74 among the top sociodemographic factors associated with employment. Specifically, an older  
75 age, being a woman and being less educated are frequently positively associated with an  
76 increased likelihood of unemployment (11–13). Unemployment has been associated with  
77 physical and mental health concerns and with an increased risk of morbidity and mortality  
78 (14,15). Stress reactions, anxiety and depressive symptoms were shown to be common  
79 responses to job loss (16). In addition, unemployment increases the risk of poverty,  
80 contributes to inequality and may jeopardize access to health care (14,17). Moreover, it has  
81 been linked to unhealthy behaviors (18), such as greater substance use (i.e., tobacco, alcohol  
82 and cannabis use). In observational studies, unemployed individuals had a higher prevalence  
83 of substance use compared to those with a job (13,19), and substance use was found to  
84 significantly increase as a response to job loss (18,20). In addition, substance use increases  
85 the likelihood of losing one's job (21). Although the adverse consequences of substance use  
86 on job loss and reciprocally have been thoroughly examined, the role of substance use on  
87 employment among job seeking individuals has not been well studied (22–25).

88 A longitudinal observational study in California examined the differences between 120 non-  
89 smokers in the previous year before study enrolment and 131 smokers; in attaining  
90 employment over a 12-month period. The results showed that non-smokers were 24% more  
91 likely to be reemployed compared to smokers after adjustment for sociodemographic and  
92 clinical factors (22).

93 Few studies investigated the role of alcohol use in employment with conflicted findings (24–  
94 26). Claussen et al. found that at-risk alcohol use (Alcohol Use Disorder Identification Test  
95 (AUDIT) >10) was significantly more prevalent among unemployed than reemployed  
96 participants at five-years of follow-up (25). While, Skärlund et al. reported that at-risk alcohol  
97 use (AUDIT >8) was not significantly associated with unemployment at one-year of follow-  
98 up (25). Several studies reported that chronic illicit drug use, including cannabis use, was  
99 associated with reduced likelihood of employment (27–29). However, to the best of our  
100 knowledge, even though, there is literature documenting the association of unemployment and  
101 tobacco use, data on cannabis and alcohol use is not yet well studied using longitudinal data.  
102 Therefore, the aim of this study was to examine prospectively the association of tobacco,

alcohol and cannabis use with attaining employment at one-year of follow-up among job seeking adults at baseline while considering sociodemographic and clinical factors and duration of the last unemployment period. We took advantage of the French national population-based CONSTANCES cohort that includes a large sample of adults from various sociodemographic backgrounds and are followed annually. We hypothesized that individuals who use substances would be less likely to get a job and that this association would follow different pathways for each substance. Our findings may be informative for preventive approaches targeting individuals who are seeking a job.

## **Methodology**

### **Participants**

The French population-based CONSTANCES cohort randomly recruited participants aged 18 to 69 at inclusion between 2012 and 2020 (n = 202,674 in 2020). At baseline and then annually, participants completed self-administered questionnaires that assessed health-related behaviors, occupational conditions and sociodemographic factors (30). The CONSTANCES Cohort was authorized by the French Data Protection Authority (Commission Nationale de l'Informatique et des Libertés, CNIL) and approved by the Institutional Review Board of the National Institute for Medical Research – INSERM (no. 01-011). All the participants provided an informed consent.

In the present study, the sample was restricted to individuals who had a previous work experience but were unemployed and seeking a job upon study enrolment (n= 11,333). From the latter sample, participants who had data on employment or unemployment at one year of follow-up were selected and included in the statistical analyses (n=5 114). Participants who were included after 2018 (n=955) who had no follow-up data (n=4,005), reported being a student, retired, not working for health reasons, or other (n=1,078) and did not report their employment status (n=181) were excluded from the analyses (**Figure 1**).

### **Substance use at baseline**

#### **Tobacco**

Smoking status was self-reported at baseline and categorized as follows: never smoker, former smoker or current smoker. Among current smokers, the number of cigarettes per day was further collected. Tobacco use was then categorized as follows: 1) Never smokers, 2)

Former smokers, 3) Current light smokers (1–9 cigarettes per day), 4) Current moderate smokers (10–19 cigarettes per day), and 5) Current heavy smokers (>19 cigarettes per day), as defined in several previous studies (31,32).

### **Alcohol**

Alcohol use at baseline was evaluated using the French version of the Alcohol Use Disorders Identification Test (AUDIT) that includes 10 items (33). The total AUDIT score was obtained by adding the scores of the ten items and was then categorized as such: 1) No use (a score of 0), 2) Low-risk (1-7), 3) Moderate risk (8-15), 4) High or very high-risk (>15).

### **Cannabis**

At baseline, the frequency of cannabis consumption was self-reported by answering the following questions: 1) “Have you ever consumed cannabis? If yes, over the past 12 months, have you consumed cannabis? And 2) Over the past 30 days, have you consumed cannabis? If yes, how many times have you consumed cannabis over the past 30 days?”. We computed a categorical variable from the previous questions as such: 1) Never consumed 2) No consumption during the last 12 months; 3) At least once during the last 12 months but less than once a month; 4) At least once a month but less than once per week; and 5) Once per week or more.

### **Employment status at follow-up**

Employment status was self-reported at one-year of follow-up with the following question : “What is your current employment situation?”: 1) employed, including on sick leave, leave without pay or availability, maternity/paternity/adoption/parental leave; 2) unemployed and job seeker; 3) retired or withdrawn from business; 4) in training (high school student, student, trainee, apprentice or other; 5) does not work for health reasons; 6) at home without employment; 7) other situation. In the present analyses, we only included participants who answered “employed” or “unemployed and seeking a job”.

### **Covariates at baseline**

We considered the following sociodemographic variables at baseline: age, gender and education. Age was analyzed as a continuous variable. Education was based on the International Standard Classification of Education (ISCED 2011) and modeled as a categorical variable as follows: less than an associate degree (level 0-4), associate degree or more (level 5-8) (34).

The duration of unemployment was considered as a binary variable: unemployed for one year or less and unemployed for more than a year (35).

At baseline, depressive symptoms were evaluated with the Center of Epidemiologic Studies Depression scale (CESD). The CESD score was dichotomized and a score  $\geq 19$  was considered as indicating a depressive state (sensitivity/specificity for the diagnosis of major depression: 0.85/0.86) (36).

Self-rated health was reported at baseline with the following question: "How would you describe your general health compared to someone you know of the same age?". Participants could answer from 1="Very good" to 8="Very Poor".

## Statistical Analysis

Descriptive statistics for the prevalence of substance use were conducted according to employment status at one-year of follow-up and chi-square or t-tests were calculated as adequate (i.e., categorical *versus* continuous variables). Second, logistic regression analyses were conducted separately for the association of each substance use at baseline and the outcome of not attaining employment at one year of follow-up. The analyses were adjusted for age, gender and education.

Third, several supplementary analyses were performed:

1. The analyses were stratified by the duration of unemployment at baseline to examine whether the role of substance use may differ according to the duration of unemployment.
2. The analyses were re-conducted after the exclusion of participants with a depressive state at baseline.

3. The three substances were introduced simultaneously in the same model to examine if one substance has a stronger association with employment rate compared to others.
4. The analyses were rerun with education as a continuous variable to examine if the associations could differ while taking into account the five categories of ISCED 2011 (assuming that these categories are ordinal representation of underlying sets of continuous units such as years of education). (37).
5. Interactions between the date of the year of follow-up and the substances were tested to account for yearly fluctuations.
6. Analyses excluding participants with poor self-reported health at baseline (score >5) were conducted because poor health condition may interfere in the search process and in finding an employment.
7. E-values were calculated to estimate the minimal estimate of an association that an unmeasured confounder would need to have with both the employment status and the substances to fully explain the reported associations (38).

The following variables had missing data: education (1.4%), AUDIT score (18.4%), tobacco use (8%) duration of unemployment (18%) and depressive status (4%) which was handled by multiple imputation with 10 datasets (39).

A two-sided value of  $P < .05$  was considered statistically significant. All analyses were conducted using SPSS IBM Statistics for Windows version 21.

## Results

### Participants' characteristics

At baseline, 64.4% of the 5,114 participants had been unemployed for less than a year. From the 5,114 participants, 4.4% were current heavy smokers, 4.1% were alcohol users at high or very high-risk, and 10.1% consumed cannabis at least once per week. At one-year of follow-up, 2,490 participants (49.7%) were still unemployed. Participants' characteristics according to employment status at follow-up are presented in **Table 1** and all the bivariate associations between substances and employment status at follow-up were significant. Characteristics of the 11,333 job seekers at baseline according to their employment status at one year of follow-up are presented in **Supplemental Table 1**.

### Tobacco use



Current moderate and heavy smokers had increased odds of not getting an employment at one-year of follow-up compared to non-smokers: ORs [95% CI] 1.33 [1.08-1.64] and 1.42 [1.04-1.93], respectively (**Table 2**).

### **Alcohol use**

Participants who do not consume alcohol and those who are at-high or very high-risk of consumption at inclusion had a higher odd of not getting employed at one-year of follow-up compared to low-risk users: 1.40 [1.03-1.83] and 2.10 [1.53-2.87], respectively (**Table 3**). In addition, the odds of not getting employed in participants with a high or very high-risk alcohol use was significantly higher than in non-users (Z-score= 3.32,  $p < 0.001$ ).

### **Cannabis use**

Consuming cannabis at least once per week was associated with an increased odd of not getting an employment at one-year of follow-up 1.63 [1.33-2.01] (**Table 4**).

### **Supplementary analyses**

- 1) After stratifying for the duration of unemployment at baseline (one year or less *versus* more than one year), the only associations that remained significant were for participants who have been unemployed for one year or less (**Supplemental Table 2**). There were no significant interactions however between substances and the duration of unemployment (all  $p$  for interactions  $> 0.05$ ).
- 2) The exclusion of participants with a depressive state at baseline ( $n = 1,369$ ), did not change the interpretation of the results (**Supplemental Table 3-5**).
- 3) The addition of the three substances in the same model yielded the same interpretations for participants who do not use alcohol (OR 1.47, 95%CI 1.07 to 2.00), for high or very high-risk alcohol users (OR 1.88, 95%CI 1.37 to 2.60) and for cannabis use at least once per week (OR 1.50, 95%CI 1.19 to 1.88). However, the associations with tobacco use did not persist (**Supplemental Table 6**).
- 4) Using education as a continuous variable did not change the significance of the results, except for no alcohol use, for which effect size the was similar but did not reach significance ( $p = 0.05$ ) (**Supplemental Table 7-9**).
- 5) There were no interactions between the number of years of follow-up and the three substances (all  $p > 0.137$ ).

6) After excluding participants with a poor self-rated health at baseline, all associations remained significant with a similar effect sizes, except for heavy tobacco use (Supplemental Table 10-12).

7) Unmeasured confounders would have to have an OR of 1.57-fold increased risk of unemployment and be 1.57 times more prevalent in moderate tobacco use to explain the observed odds ratio for moderate smoking (95%CI 1.24 – Not applicable (NA)). These e-values were of 1.67 (95%CI 1.16 - NA) for heavy tobacco use, 1.64 (95%CI 1.13 - NA) for no alcohol use, 2.25 (95%CI 1.77 - NA) for at high or very high-risk alcohol use and 1.87 (95%CI 1.57 - NA) for at least weekly cannabis use.

## Discussion

In the present study, we aimed to examine prospectively the association between tobacco, alcohol and cannabis use with attaining employment at one-year of follow-up among job seeking unemployed adults from a national population-based cohort. All the three substances were significantly associated with employment status at one-year of follow up after adjusting for age, gender and education. Moderate or heavy smoking, no alcohol use or using alcohol at high or very high-risk and at consuming cannabis at least once per week were associated with decreased likelihood of attaining employment at follow-up. All these associations remained significant after the exclusion of participants with a depressive state at baseline. These associations concern especially unemployed job seekers for one year or less and the role of alcohol and cannabis use were stronger than tobacco use.

Current moderate and heavy smokers were less likely to be employed at follow-up. This result supports the findings of an earlier longitudinal study which found that non-smokers were more likely to be employed compared to smokers but where no comparison between never smokers and former smokers was made (22). A meta-analysis on smoking and employment concluded that smokers were 33% more likely to be absent from work and to take extra sick leave compared to non-smokers (40) and a study by Berman et al estimated that in the US, a smoking employee costs an extra \$5816 annually (41). These issues could discourage employers from recruiting smokers. In fact in a qualitative study, unemployed job seeking daily smokers expressed their concern that smoking prevented them from finding a job and mentioned their feeling about the physical characteristics of smoking (e.g., the smell of cigarette smoke, altered vocal chords and teeth discoloration) that could have impeded their

chances of getting employed (23). Furthermore, on study showed that cigarette consumption ranks second behind food about spending behaviors among job seeking heavy smokers (42). Thus, smoking was prioritized over job seeking resources (e.g., cell phone, transportation) and health care.

Alcohol non-users were more likely to remain unemployed at follow-up compared to low-risk alcohol users while high or very high-risk alcohol users had a higher likelihood of staying unemployed. In line with previous studies regarding health outcomes, these results reveal a non-linear relationship between alcohol use and employment (24,26,43). Low-risk alcohol users may have better physical and mental health than those who are heavy drinkers and individuals who do not consume alcohol at all (because some people do not drink for health reasons and some are also former heavy drinkers who have stopped drinking (44). However, since not using alcohol remained associated with employment status after the exclusion of participants with poor self-rated health, other factors may account for these associations. For instance, since alcohol consumption is a common habit in France, (45) no alcohol consumption may limit social networking and therefore opportunities to meet potential employers or increase the chance to hear more about new job offers. Moreover, high-risk alcohol use can promote cognitive disorders (e.g., motivation processes), inappropriate behaviors (e.g., disinhibition, irritability) and health issues (e.g., hepatitis, pancreatitis) leading to decreased chances of finding a job. In addition, employers may notice alcohol consumption during job interviews (e.g., smell of alcohol or withdrawal symptoms such as tremors).

Participants who use cannabis for at least once a week were more likely to remain unemployed at follow-up compared to participants who do not use it. This result is in line with prior literature regarding the decreased employment rate in middle-aged adults who were regular cannabis users during their adolescence, compared to non-users or experimenters (46). Regular cannabis use can adversely affect cognitive functioning (e.g., difficulty in attention and concentration, deterioration in thought structuring and expression, memory disorders), psychomotor functioning (e.g., perceptual and motor coordination), physiological functioning (e.g., drowsiness, sleep disorders) and can promote psychiatric disorders (47). Such symptoms may hinder job searching, performance during job interviews which may decrease the likelihood of getting a job. In addition, at least in France where cannabis is illegal, employers may be reluctant to hire cannabis users, whenever noticeable, in order to avoid legal issues.

Our study is, to the best of our knowledge, the first to assess the association between tobacco, alcohol and cannabis use and the likelihood of getting employed among unemployed adults who are seeking a job. Moreover, we adjusted for sociodemographic factors and we took into consideration the duration of unemployment and the depressive state using a standardized assessment tool.

This study has several limitations. First, although the participants of the CONSTANCES cohort were randomly recruited, voluntary participation is subject to selection bias and thus the participants are not representative of the general population. They have higher education level and consume less tobacco, alcohol or cannabis compared to the general population (48). Second, since data were collected before the Covid-19 pandemic, findings must be extrapolated with great caution to the pandemic period. Third, response rate at follow-up was of 59.7% and non-responders could differ from responders such as their use of substances which was higher at baseline for individuals who did not respond at follow-up. It must be noted however that participants who did not respond to follow-up had not answered the entire questionnaire and not specifically the question about their employment status. Unfortunately, this loss to follow-up can lead to a decreased statistical power. Fourth, since the data on substance use were self-reported, they could be subject to social desirability and/or recall bias. However, self-reported health risk behaviors via confidential questionnaires was found to be one of the collection methods that were least associated with social desirability bias (49,50). Fifth, we cannot draw a causal conclusion since it is an observational study and unmeasured confounding factors may play a role in the associations between substance use and employment (e.g., personality traits including impulsivity, environments with few opportunities, being part of a sexual minority among other factors). However, education, a variable known to be strongly associated with both substance use and employment (51,52) had a strength of association of 1.4. Thus, according to the calculated e-values (1.57 for moderate smoking, 1.67 for heavy smoking, 1.64 for no alcohol use, 2.25 for high or very high alcohol use and 1.87 for at least weekly cannabis use), such confounders should have a greater effect size than education to fully explain the reported associations, and even an effect size of at least 60% larger than that of education for high or very high alcohol use (53,54).

## Conclusion

Our results suggest that public health campaigns should inform the general population (i.e., employed and unemployed subjects) on the greatest difficulties of substance users for being employed when they seek a job. Such information might be useful to motivate individuals who have started looking for a job to try decreasing their substance use and seek help before they get into a vicious circle of a worsening of substance use and prolonged unemployment. The associations between substance use and employment were only significant among participants who have been unemployed for a year or less. This highlights the urge for considering substance use at the very beginning of unemployment since after a prolonged period of unemployment (e.g., more than a year), other factors may take over the role of substance use in finding a job such as discouragement leading to a less active job search, loss of professional networks and reluctance of employers to hire a long-term unemployed person. Further studies should investigate the benefits of the SBIRT approach (Screening, Brief Intervention, Referral to Treatment) on the odds of employment among job seekers. Lastly, the role of other substances (e.g., stimulants, benzodiazepines, hallucinogens) should be investigated (55).

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#### Conflicts of interest

Guillaume Airagnes has received speakers and/or consulting fees from Pfizer, Lundbeck and Pierre Fabre. Cédric Lemogne has received speakers and/or consulting fees from Lundbeck,

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382 preparation of the manuscript. Rita El Haddad, Joane Matta, Emmanuel Wiernik, Marcel  
383 Goldberg, Maria Melchior, Yves Roquelaure, Frédéric Limosin, and Marie Zins report no  
384 conflicts of interest.

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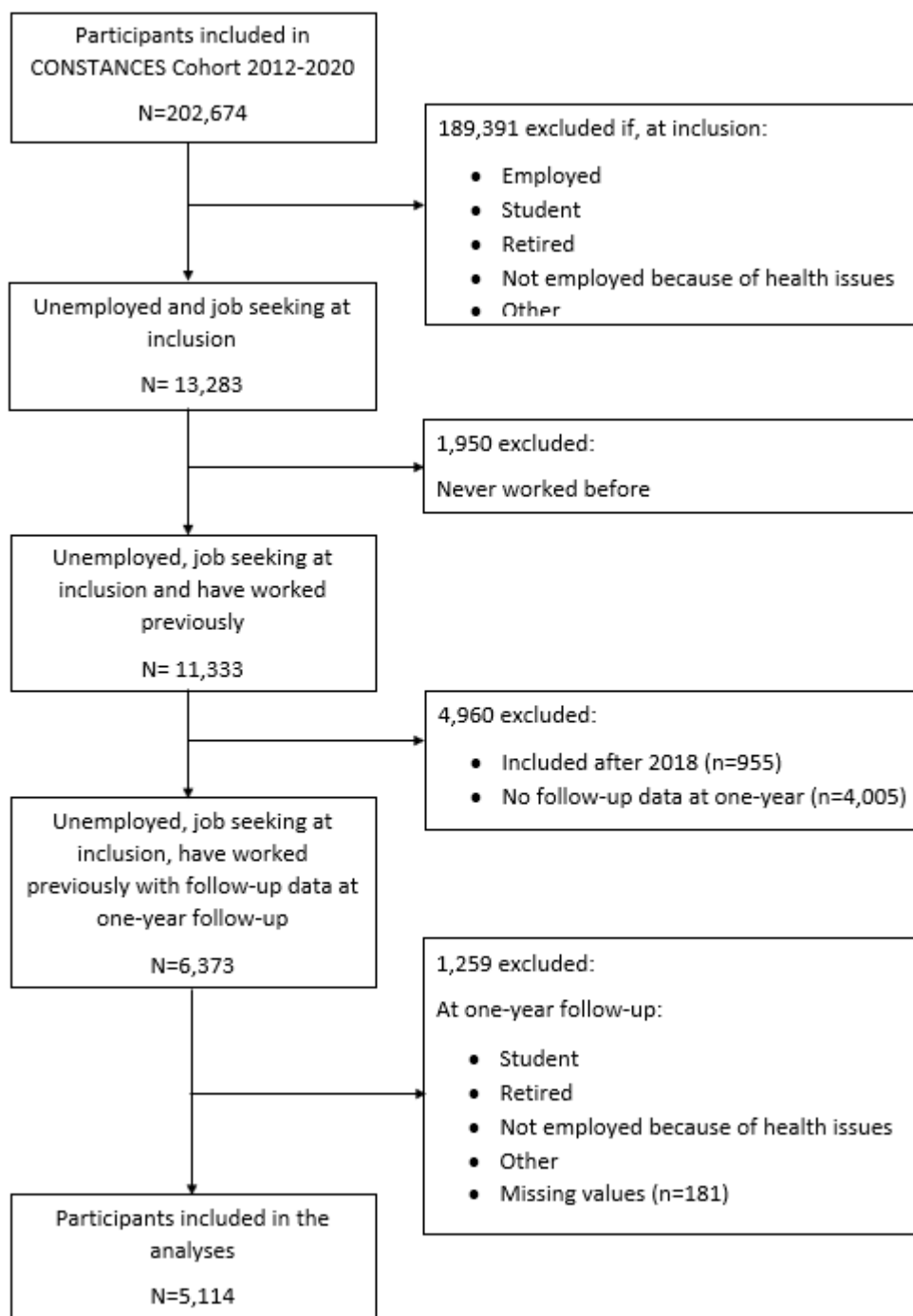
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522 *Table 1. Characteristics of the 5114 participants included at baseline according to their employment status at one- year of*  
 523 *follow-up.*

	<b>Total</b>	<b>Employed</b>	<b>Unemployed</b>	<b>Chi square</b>	<b>P value</b>
	5114 (100%)	2624 (51.3)	2490 (48.7)		
<b>Tobacco Use</b>				44.82	<0.001
Non-smoker	2110 (41.3)	1169 (44.5)	941 (37.8)		
Former smoker	1617 (31.6)	776 (29.6)	841 (33.8)		
Current light smoker	591 (11.6)	327 (12.5)	264 (10.6)		
Current moderate smoker	570 (11.1)	264 (10.1)	306 (12.3)		
Current heavy smoker	226 (4.4)	88 (3.3)	138 (5.5)		
<b>Alcohol use (AUDIT)<sup>a</sup></b>				26.54	<0.001
No use (0)	230 (4.5)	105 (4.0)	125 (5.0)		
Low risk (1-7)	3799 (74.3)	1999 (76.2)	1799 (72.2)		
Moderate risk (8-15)	876 (17.1)	446 (17)	431 (17.3)		
High or very high-risk (>15)	209 (4.1)	74 (2.8)	135 (5.4)		
<b>Cannabis Consumption</b>				43.42	<0.001
Never consumed	2427 (47.5)	1201 (45.8)	1226 (49.2)		
Not during the previous year	1655 (32.4)	892 (34.0)	763 (30.6)		
At least once during the last 12 months but less than once a month	329 (6.4)	207 (7.9)	122 (4.9)		
At least once a month but less than once per week	189 (3.7)	106 (4)	83 (3.3)		
Once per week or more	514 (10.1)	218 (8.3)	296 (11.9)		
<b>Age</b>	41.98 ±11.52	38.7±10.65	45.35±11.35	-21.27 <sup>e</sup>	<0.001
<b>Gender</b>				19.86	<0.001
Men	2147 (42.0)	1023 (39.0)	1124 (45.0)		
Women	2967 (58.0)	1601 (61.0)	1366 (54.9)		
<b>Education<sup>b</sup></b>				84.07	<0.001
Less than an associate degree	2219 (43.4)	976 (37.2)	1243 (49.9)		
Associate degree or more	2895 (56.6)	1648 (62.8)	1247 (50.1)		
<b>Duration of Unemployment</b>				203.18	<0.001
< 1 year	3293 (64.4)	1934 (73.7)	1360 (54.6)		
≥ 1 year	1821 (35.6)	690 (26.3)	1130 (45.4)		
<b>Depressive Symptoms<sup>c</sup></b>				27.89	<0.001
No	3745 (73.2)	2009 (76.6)	1736 (69.7)		
Yes	1369 (26.8)	615 (23.4)	754 (30.3)		
<b>Self-rated Health Score<sup>d</sup></b>				25.50	<0.001
≤5	4684 (91.6)	2455 (93.6)	2229 (89.5)		
> 5	430 (8.4)	169 (6.4)	229 (10.5)		

<sup>a</sup> Alcohol Use Disorders Identification Test to evaluate alcohol use.

<sup>b</sup> Based on the International Standard Classification of Education.

<sup>c</sup> Measured using the Center of Epidemiologic Studies Depression scale and a score ≥19.

<sup>d</sup> Self-rated health score from 1="Very good" to 8="Very Poor"

<sup>e</sup> Independent t-test for continuous variable.

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525 *Table 2. Association between tobacco use and not returning to employment at one-year follow-up (n=5,114).*

<b>Not employed at one-year of follow-up</b>
<b>OR                      95% CI</b>

<b>Tobacco Use</b>			
Non-smoker	Ref	-	-
Former smoker	1.06	0.91	1.22
Current light smoker	1.11	0.91	1.36
Current moderate smoker	<b>1.33</b>	<b>1.08</b>	<b>1.64</b>
Current heavy smoker	<b>1.42</b>	<b>1.04</b>	<b>1.93</b>
<b>Age</b>	<b>1.05</b>	<b>1.04</b>	<b>1.06</b>
<b>Gender</b>			
Men	Ref	-	-
Women	<b>0.88</b>	<b>0.78</b>	<b>0.99</b>
<b>Education<sup>a</sup></b>			
Less than an associate degree	Ref	-	-
Associate degree or more	<b>0.72</b>	<b>0.64</b>	<b>0.81</b>

<sup>a</sup> Based on the International Standard Classification of Education.

Table 3. Association between alcohol use and not returning to employment at one-year of follow-up (n=5,114).

<b>Not employed at one-year of follow-up</b>			
	<b>OR</b>	<b>95% CI</b>	
<b>Alcohol use (AUDIT)<sup>a</sup></b>			
Low risk	Ref	-	-
No use	<b>1.40</b>	<b>1.03</b>	<b>1.89</b>
Moderate risk	1.17	0.99	1.38
High or very high-risk	<b>2.10</b>	<b>1.53</b>	<b>2.87</b>
<b>Age</b>	<b>1.05</b>	<b>1.04</b>	<b>1.05</b>
<b>Gender</b>			
Men	Ref	-	-
Women	0.91	0.81	1.03
<b>Education<sup>b</sup></b>			
Less than an associate degree	Ref	-	-
Associate degree or more	<b>0.72</b>	<b>0.64</b>	<b>0.81</b>

<sup>a</sup> Alcohol Use Disorders Identification Test to evaluate alcohol use.

<sup>b</sup> Based on the International Standard Classification of Education.

530 *Table 2. Association between cannabis consumption and not returning to employment at one-year of follow-up (n=5,114).*

<b>Not employed at one-year of follow-up</b>			
	<b>OR</b>	<b>95% CI</b>	
<b>Cannabis consumption</b>			
Never consumed	Ref	-	-
Not during the previous year	1.06	0.93	1.21
At least once during the last 12 months but less than once a month	0.92	0.71	1.18
At least once a month but less than once per week	1.25	0.92	1.70
Once per week or more	<b>1.63</b>	<b>1.33</b>	<b>2.01</b>
<b>Age</b>	<b>1.05</b>	<b>1.04</b>	<b>1.06</b>
<b>Gender</b>			
Men	Ref	-	-
Women	0.90	0.80	1.00
<b>Education<sup>a</sup></b>			
Less than an associate degree	Ref	-	-
Associate degree or more	<b>0.71</b>	<b>0.63</b>	<b>0.80</b>

<sup>a</sup>Based on the International Standard Classification of Education.

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## 533 Supplemental Tables

534 *Supplemental Table 1. Characteristics of the 10,378 participants at baseline according to their response to employment*  
 535 *status at one year of follow-up.*

	Included			Not included	
	Unemployed	Employed	Total	Other <sup>a</sup>	Missing
	2490	2624	5114 (49.3%)	1078 (10.4)	4186 (40.3)
<b>Tobacco Use</b>					
Non-smoker	898 (36.1)	1125 (42.9)	2023 (39.6)	392 (36.4)	1400 (33.4)
Former smoker	779 (31.3)	710 (27.1)	1489 (29.1)	373 (34.6)	970 (23.2)
Current light smoker	198 (8.0)	279 (10.6)	477 (9.3)	77 (7.1)	463 (11.1)
Current moderate smoker	272 (10.9)	237 (9.0)	509 (10.0)	105 (9.7)	626 (15.0)
Current heavy smoker	127 (5.1)	82 (3.1)	209 (4.1)	46 (4.3)	277 (6.6)
Missing	216 (8.7)	191 (7.3)	407 (8.0)	85 (7.9)	450 (10.8)
<b>Alcohol use (AUDIT)<sup>b</sup></b>					
No use (0)	117 (4.7)	98 (3.7)	215 (4.2)	54 (5.0)	298 (7.1)
Low-risk (1-7)	1433 (57.6)	1708 (65.1)	3141 (61.4)	632 (58.6)	2030 (48.5)
Moderate risk (8-15)	291 (11.7)	360 (13.7)	651 (12.7)	140 (13.0)	472 (11.3)
High or very high-risk (>15)	102 (4.1)	64 (2.4)	166 (3.2)	36 (3.3)	199 (4.8)
Missing	547 (22.0)	394 (15.0)	941 (18.4)	216 (20.0)	1187 (28.4)
<b>Cannabis Consumption</b>					
Never consumed	1226 (49.2)	1201 (45.8)	2427 (47.5)	566 (52.5)	1788 (42.7)
Not during the previous year	763 (30.6)	892 (34.0)	1655 (32.4)	315 (29.2)	1179 (28.2)
At least once during the last 12 months but less than once a month	122 (4.9)	207 (7.9)	329 (6.4)	52 (4.8)	301 (7.2)
At least once a month but less than once per week	83 (3.3)	106 (4.0)	189 (3.7)	41 (3.8)	188 (4.5)
Once per week or more	296 (11.9)	218 (8.3)	514 (10.1)	104 (9.6)	730 (17.4)
<b>Age</b>	45.3±11.35	38.7±10.65	41.98 ±11.52	46.7±13.01	40.13±11.56
<b>Gender</b>					
Men	1124 (45.0)	1023 (39.0)	2147 (42.0)	478 (44.3)	2035 (48.6)
Women	1366 (54.9)	1601 (61.0)	2967 (58.0)	600 (55.7)	2151 (51.4)
<b>Education<sup>c</sup></b>					
Less than an associate degree	1218 (48.9)	963 (36.7)	2181 (42.6)	531 (49.3)	2345 (56.0)
Associate degree or more	1226 (49.2)	1637 (62.4)	2863 (56.0)	534 (49.5)	1739 (41.5)
Missing	46 (1.8)	24 (0.9)	70 (1.4)	13 (1.2)	102 (2.4)
<b>Duration of Unemployment</b>					
≤1 year	1242 (49.9)	1774 (67.6)	3016 (59.0)	489 (45.4)	2275 (54.3)
>1 year	777 (31.2)	399 (15.2)	1176 (23.0)	380 (35.3)	1101 (26.3)
Missing	471 (18.9)	451 (17.2)	922 (18.0)	209 (19.4)	810 (19.4)
<b>Depressive Symptoms<sup>d</sup></b>					
No	1660 (66.7)	1954 (74.5)	3614 (70.7)	731 (67.8)	2644 (63.2)
Yes	705 (28.3)	589 (22.4)	1294 (25.3)	289 (26.8)	1264 (30.2)
Missing	125 (5.0)	81 (3.1)	206 (4.0)	58 (5.4)	278 (6.6)
<b>Self-rated Health Score<sup>e</sup></b>					
≤5	2135 (85.7)	2350 (89.6)	4485 (87.7)	926 (85.9)	3508 (83.8)
> 5	251 (10.1)	165 (6.3)	416 (8.1)	112 (10.4)	453 (10.8)
Missing	104 (4.2)	109 (4.2)	213 (4.2)	40 (3.7)	225 (5.4)

<sup>a</sup> Retired, in training, does not work for health reasons, at home or other situations.

<sup>b</sup> Alcohol Use Disorders Identification Test to evaluate alcohol use.

<sup>c</sup> Based on the International Standard Classification of Education.

<sup>d</sup> Measured using the Center of Epidemiologic Studies Depression scale (CESD) and a score ≥19

<sup>e</sup> Self-rated health score from 1="Very good" to 8="Very Poor"



Supplemental Table 2. Association between alcohol, tobacco and cannabis use and not returning to employment at one-year of follow-up stratified on the duration of unemployment at baseline (n=5,114).

Not employed at one-year of follow-up				
		OR	95% CI	
≤ 1 year of unemployment N= 3293	<b>Tobacco Use</b>			
	Non-smoker	Ref	-	-
	Former smoker	1.14	0.96	1.36
	Current smoker	<b>1.33</b>	<b>1.10</b>	<b>1.61</b>
	<b>Alcohol use (AUDIT)<sup>a</sup></b>			
	Low risk	Ref	-	-
	No use	1.32	0.91	1.91
	At-risk	<b>1.35</b>	<b>1.11</b>	<b>1.63</b>
	<b>Cannabis consumption</b>			
	Never used	Ref	-	-
	Less than once weekly	1.11	0.95	1.30
	Once per week or more	<b>1.76</b>	<b>1.36</b>	<b>2.28</b>
> 1 year of unemployment N= 1821	<b>Tobacco Use</b>			
	Non-smoker	Ref	-	-
	Former smoker	0.94	0.72	1.23
	Current smoker	1.07	0.79	1.45
	<b>Alcohol use (AUDIT)<sup>a</sup></b>			
	Low risk	Ref	-	-
	No use	1.45	0.86	2.42
	At-risk	1.18	0.86	1.62
	<b>Cannabis consumption</b>			
	Never used	Ref	-	-
	Less than once weekly	1.00	0.80	1.25
	Once per week or more	1.43	0.98	2.09

A separate model was performed for each substance adjusted for age, gender and education.

<sup>a</sup> Alcohol Use Disorders Identification Test to evaluate alcohol use.

Supplemental Table 3. Association between tobacco use and not returning to employment at one-year of follow-up after excluding participants with depressive symptoms (n=3,745).

Not employed at one-year of follow-up			
	OR	95% CI	
<b>Tobacco Use</b>			
Non-smoker	Ref	-	-
Former smoker	1.04	0.87	1.23
Current smoker	<b>1.22</b>	<b>1.02</b>	<b>1.46</b>
<b>Age</b>	<b>1.05</b>	<b>1.05</b>	<b>1.06</b>
<b>Gender</b>			
Men	Ref	-	-
Women	0.93	0.81	1.06
<b>Education<sup>a</sup></b>			
Less than an associate degree	Ref	-	-
Associate degree or more	<b>0.74</b>	<b>0.64</b>	<b>0.86</b>

<sup>a</sup> Based on the Standard International Classification of Education

Supplemental Table 4. Association between alcohol use and not returning to employment at one-year of follow-up after excluding participants with depressive symptoms (n=3,745).

Not employed at one-year of follow-up			
	OR	95% CI	
<b>Alcohol use (AUDIT)<sup>a</sup></b>			
Low risk	Ref	-	-
No use	1.33	0.94	1.88
At-risk	<b>1.28</b>	<b>1.06</b>	<b>1.55</b>
<b>Age</b>	<b>1.05</b>	<b>1.05</b>	<b>1.06</b>
<b>Gender</b>			
Men	Ref	-	-
Women	0.96	0.83	1.10
<b>Education<sup>b</sup></b>			
Less than an associate degree	Ref	-	-
Associate degree or more	<b>0.74</b>	<b>0.64</b>	<b>0.85</b>

<sup>a</sup> Alcohol Use Disorders Identification Test to evaluate alcohol use.

<sup>b</sup> Based on the Standard International Classification of Education

551 *Supplemental Table 5. Association between cannabis consumption and not returning to employment at one-year of follow-up*  
 552 *after excluding participants with depressive symptoms (n=3,745).*

Not employed at one-year of follow-up			
	OR	95% CI	
<b>Cannabis consumption</b>			
Never consumed	Ref	-	-
Less than once weekly	1.09	0.94	1.27
Once per week or more	<b>1.62</b>	<b>1.26</b>	<b>2.09</b>
<b>Age</b>	<b>1.05</b>	<b>1.04</b>	<b>1.06</b>
<b>Gender</b>			
Men	Ref	-	-
Women	0.95	0.83	1.09
<b>Education<sup>a</sup></b>			
Less than an associate degree	Ref	-	-
Associate degree or more	<b>0.74</b>	<b>0.64</b>	<b>0.85</b>

<sup>a</sup> Based on the Standard International Classification of Education

553

554 *Supplemental Table 6. Association between alcohol, tobacco and cannabis consumption and not returning to employment at*  
 555 *one-year of follow-up (n=5,114).*

Not employed at one-year of follow-up			
	OR	95% CI	
<b>Tobacco Use</b>			
Non-smoker	Ref	-	-
Former smoker	1.04	0.89	1.22
Current light smoker	0.99	0.80	1.25
Current moderate smoker	1.18	0.94	1.48
Current heavy smoker	1.24	0.90	1.72
<b>Alcohol use (AUDIT)<sup>a</sup></b>			
Low-risk	Ref	-	-
No use	<b>1.47</b>	<b>1.07</b>	<b>2.00</b>
Moderate risk	1.09	0.92	1.30
High or very high-risk	<b>1.88</b>	<b>1.37</b>	<b>2.60</b>
<b>Cannabis Consumption</b>			
Never consumed	Ref	-	-
Not during the previous year	1.04	0.90	1.21
At least once during the last 12 months but less than once a month	0.85	0.65	1.10
At least once a month but less than once per week	1.14	0.82	1.59
Once per week or more	<b>1.50</b>	<b>1.19</b>	<b>1.88</b>
<b>Age</b>	<b>1.05</b>	<b>1.04</b>	<b>1.06</b>
<b>Gender</b>			
Men	Ref	-	-
Women	0.93	0.82	1.05
<b>Education<sup>b</sup></b>			
Less than an associate degree	Ref	-	-
Associate degree or more	<b>0.73</b>	<b>0.65</b>	<b>0.83</b>

<sup>a</sup> Alcohol Use Disorders Identification Test to evaluate alcohol use.

<sup>b</sup> Based on the Standard International Classification of Education

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Supplemental Table 7. Association between tobacco use and not returning to employment at one-year of follow-up (n=5,114).

Not employed at one-year of follow-up			
	OR	95% CI	
<b>Tobacco Use</b>			
Non-smoker	Ref	-	-
Former smoker	1.04	0.90	1.20
Current light smoker	1.09	0.89	1.34
Current moderate smoker	<b>1.28</b>	<b>1.04</b>	<b>1.58</b>
Current heavy smoker	<b>1.37</b>	<b>1.01</b>	<b>1.87</b>
<b>Age</b>	<b>1.05</b>	<b>1.04</b>	<b>1.06</b>
<b>Gender</b>			
Men	Ref	-	-
Women	<b>0.87</b>	<b>0.78</b>	<b>0.99</b>
<b>Education<sup>a</sup></b>	<b>0.80</b>	<b>0.75</b>	<b>0.85</b>

<sup>a</sup> Based on the International Standard Classification of Education.

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Supplemental Table 8. Association between alcohol use and not returning to employment at one-year of follow-up (n=5,114).

Not employed at one-year of follow-up			
	OR	95% CI	
<b>Alcohol use (AUDIT)<sup>a</sup></b>			
Low-risk	Ref	-	-
No use	1.35	1.00	1.83
Moderate risk	1.16	0.98	1.37
High or very high-risk	<b>2.07</b>	<b>1.51</b>	<b>2.84</b>
<b>Age</b>	<b>1.05</b>	<b>1.04</b>	<b>1.06</b>
<b>Gender</b>			
Men	Ref	-	-
Women	0.90	0.80	1.02
<b>Education<sup>b</sup></b>	<b>0.80</b>	<b>0.75</b>	<b>0.85</b>

<sup>a</sup> Alcohol Use Disorders Identification Test to evaluate alcohol use.

<sup>b</sup> Based on the International Standard Classification of Education.

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Supplemental Table 9. Association between cannabis consumption and not returning to employment at one-year of follow-up (n=5,114).

Not employed at one-year of follow-up			
	OR	95% CI	
<b>Cannabis consumption</b>			
Never consumed	Ref	-	-
Not during the previous year	1.07	0.93	1.22
At least once during the last 12 months but less than once a month	0.92	0.72	1.19
At least once a month but less than once per week	1.26	0.92	1.74
Once per week or more	<b>1.59</b>	<b>1.30</b>	<b>1.96</b>
<b>Age</b>	<b>1.05</b>	<b>1.04</b>	<b>1.06</b>
<b>Gender</b>			
Men	Ref	-	-
Women	0.89	0.79	1.00
<b>Education<sup>a</sup></b>	<b>0.80</b>	<b>0.75</b>	<b>0.85</b>

<sup>a</sup> Based on the International Standard Classification of Education.

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Supplemental Table 10. Association between tobacco use and not returning to employment at one-year of follow-up after excluding participants with poor self-rated health (n=4,684).

Not employed at one-year of follow-up			
	OR	95% CI	
<b>Tobacco Use</b>			
Non-smoker	Ref	-	-
Former smoker	1.09	0.94	1.26
Current light smoker	1.13	0.91	1.39
Current moderate smoker	<b>1.37</b>	<b>1.10</b>	<b>1.69</b>
Current heavy smoker	1.35	0.97	1.87
<b>Age</b>	<b>1.05</b>	<b>1.04</b>	<b>1.06</b>
<b>Gender</b>			
Men	Ref	-	-
Women	0.88	0.78	1.01
<b>Education<sup>a</sup></b>			
Less than an associate degree	Ref	-	-
Associate degree or more	<b>0.72</b>	<b>0.64</b>	<b>0.82</b>

<sup>a</sup> Based on the International Standard Classification of Education.

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Supplemental Table 11. Association between alcohol use and not returning to employment at one-year of follow-up after excluding participants with poor self-rated health (n=4,684).

Not employed at one-year of follow-up			
	OR	95% CI	
<b>Alcohol use (AUDIT)<sup>a</sup></b>			
Low-risk	Ref	-	-
No use	<b>1.37</b>	<b>1.01</b>	<b>1.87</b>
Moderate risk	1.14	0.96	1.36
High or very high-risk	<b>2.01</b>	<b>1.45</b>	<b>2.78</b>
<b>Age</b>	<b>1.05</b>	<b>1.04</b>	<b>1.05</b>
<b>Gender</b>			
Men	Ref	-	-
Women	0.91	0.81	1.03
<b>Education<sup>b</sup></b>			
Less than an associate degree	Ref	-	-
Associate degree or more	<b>0.72</b>	<b>0.64</b>	<b>0.81</b>

<sup>a</sup> Alcohol Use Disorders Identification Test to evaluate alcohol use.

<sup>b</sup> Based on the International Standard Classification of Education.

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Supplemental Table 12. Association between cannabis consumption and not returning to employment at one-year of follow-up after excluding participants with poor self-rated health (n=4,684).

Not employed at one-year of follow-up			
	OR	95% CI	
<b>Cannabis consumption</b>			
Never consumed	Ref	-	-
Not during the previous year	1.06	0.92	1.21
At least once during the last 12 months but less than once a month	0.98	0.75	1.27
At least once a month but less than once per week	1.20	0.86	1.67
Once per week or more	<b>1.71</b>	<b>1.38</b>	<b>2.12</b>
<b>Age</b>	<b>1.05</b>	<b>1.04</b>	<b>1.06</b>
<b>Gender</b>			
Men	Ref	-	-
Women	0.90	0.80	1.02
<b>Education<sup>a</sup></b>			
Less than an associate degree	Ref	-	-
Associate degree or more	<b>0.71</b>	<b>0.63</b>	<b>0.81</b>

<sup>a</sup> Based on the International Standard Classification of Education.

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