

A Field Experiment on Labor Market Speeddates for Unemployed Workers

Bas van der Klaauw

VU University Amsterdam, Tinbergen Institute, CEPR

Lennart Ziegler

University of Vienna

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Motivation

Speeddating as matching technology

- Mostly associated with seeking a partner
- Reduction in search costs
- Also applicable in the labor market?

..and temporary work agencies

- Make up growing share of labor market in many countries
- Flexible, fast mediation of vacancies
- Often associated with lower pay/less fringe benefits

This paper

Novel job matching program (“Speeddates”) in the Netherlands

- Meetings between unemployed and temporary work agencies
- Short, direct and inexpensive intervention
- No direct assistance of UI office

Randomized experiment to evaluate effectiveness

- Do speeddates increase job finding rates?
- Does temporary work have a persistent impact?
 - Stepping stone effect
 - Crowding out effect
- Do speeddates affect job search behavior?

Literature

Job search assistance

- Many programs have moderate impact (Card et al., 2010; 2015; Kluve, 2010)
- Activation schemes increasingly complex and costly (Sianesi, 2004; Rosholm, 2008; Graversen and Van Ours, 2008)
- Mixed results on cost effectiveness (Crépon et al., 2013; Behaghel et al., 2014)

Temporary work

- Evidence for stepping stone effect (Katz et al., 1999; Booth et al., 2002; Heinrich et al., 2005; De Graaf-Zijl et al., 2011)
- Evidence for detrimental impact (Autor and Houseman, 2010)

Institutional background

Unemployment insurance in the Netherlands

- Replacement rate: 75% in first two months, 70% afterwards
- Benefit duration depends on number of working years (min: 3 months, max: 38 months)
- Some job search requirements

Temporary work agencies in the Netherlands

- Large share of labor market ($\frac{1}{3}$ of unemployed workers mediated; 6,000+ agencies)
- Temporary contracts (3/6/12 months); at most 6 consecutive contracts or 4 years
- Provide less fringe benefits
- No work guarantee

Speeddates

- Organized by local UI offices
- Participation not compulsory but counts as job search activity
- Can be general or sector-specific
- Size of events ranges from 20 to 700 participants
- On average, participants talk 7-8 minutes with 4 agencies



Experiment

1. Pre-selection of eligible job searchers by UI administration
2. Randomization into treatment and control group
3. Job seekers in treatment group receive invitation to participate in speeddate

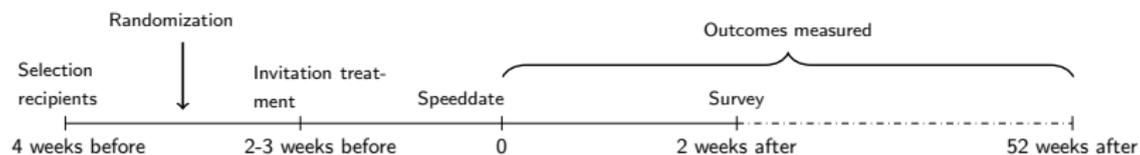


Figure: Timeline experiment

Overview speeddates

#	Location	Date	Type	Size	Treatment	Show up
1	Doetinchem	4-Jul-14	General	188	51%	19%
2	Doetinchem	5-Sep-14	Technical	170	48%	17%
3	Leeuwarden	17-Sep-14	General	4132	76%	21%
4	Eindhoven	18-Sep-14	Technical, Transport, Logistics, Industry, Security, Construction, ICT	936	50%	24%
5	Leeuwarden	12-Nov-14	General	2942	82%	29%
6	Venlo	22-Jan-15	General	314	80%	38%
7	Zwolle	4-Feb-15	General	350	80%	13%
8	Groningen	19-Mar-15	Commercial services	478	80%	19%

Note – Further speeddates (Jun 2015 - Feb 2016) will be added to analysis.

Data

Data from UI and tax administration (sample size: 8,361)

- Income spells (UI benefits, labor earnings before taxes)
- Job characteristics (working days, type of contract)
- Individual characteristics (age, gender, education, marital status)
- Time range: up to 3 months before and 12 months after speeddate

Data

Survey data (sample size: 1,931)

- Online questionnaire (duration: 6-8 min) sent by email 2 weeks after matching event
- Response rate: 23% (balanced between treatment/control group)
- Questions about job search behavior (motivation, # applications, reservation wages, etc.) and, if applicable, speeddate
- Data weighted by demographics of full sample to account for selective response

Balancing table

	Control group	Treatment group	p-value
Female	0.39 (0.49)	0.38 (0.49)	0.34
Age	40.42 (11.87)	40.60 (11.87)	0.55
Married	0.42 (0.49)	0.42 (0.49)	0.53
Primary/lower secondary edu.	0.20 (0.40)	0.20 (0.40)	0.43
Higher secondary education	0.59 (0.49)	0.58 (0.49)	0.19
College/university education	0.21 (0.41)	0.22 (0.41)	0.42
Benefits (prev. 3 months)	1475.16 (2305.66)	1380.71 (2142.68)	0.10
Earnings (prev. 3 months)	2440.57 (3690.55)	2457.96 (4290.46)	0.86
Workdays (prev. 3 months)	21.31 (22.38)	21.72 (22.51)	0.47
Perm. contract (prev. 3 months)	0.09 (0.29)	0.08 (0.27)	0.09
Observations	2,124	6,237	

Note – All estimates are weighted by inverse treatment assignment probabilities. Columns (2) and (3) report means, with standard deviations in parentheses. Column (4) shows p -values of two-sided difference-in-means tests.

Estimation strategy

$$Y_{is} = \mu_s + \delta T_i + X_{is}'\beta + u_{is}$$

- Y_{is} : outcome, T_i : treatment, X_{is} : pre-treatment characteristics, μ_s : speeddate fixed effects
- Using treatment assignment as instrument for participation, we obtain LATE ($\hat{\delta}_{IV}$)
- Because there are no always-takers, LATE estimates the *average treatment effect on the treated* (ATET)
- Replacing T_i by treatment assignment in the equation above, we obtain the *intention to treat effect* (ITT)

First-stage estimates

Attendance	(1)	(2)	(3)	(4)
Treatment assignment	0.237*** (0.010)	0.237*** (0.009)	0.241*** (0.011)	0.238*** (0.019)
Sector-specific \times treatment			-0.018 (0.023)	
Invitations ($\times 10^4$) \times treatment				-0.003 (0.061)
Control group mean	0.000	0.000	0.000	0.000
Characteristics	No	Yes	Yes	Yes
<i>F</i> -statistic (on excl. instruments)	615.81	639.13	319.86	319.53

Note – $N = 8,361$. All regressions include speeddate fixed effects. Standard errors are reported in parentheses; * significant at 10% level, ** significant at 5% level, *** significant at 1% level.

► Compliers vs Never-takers

UI benefits

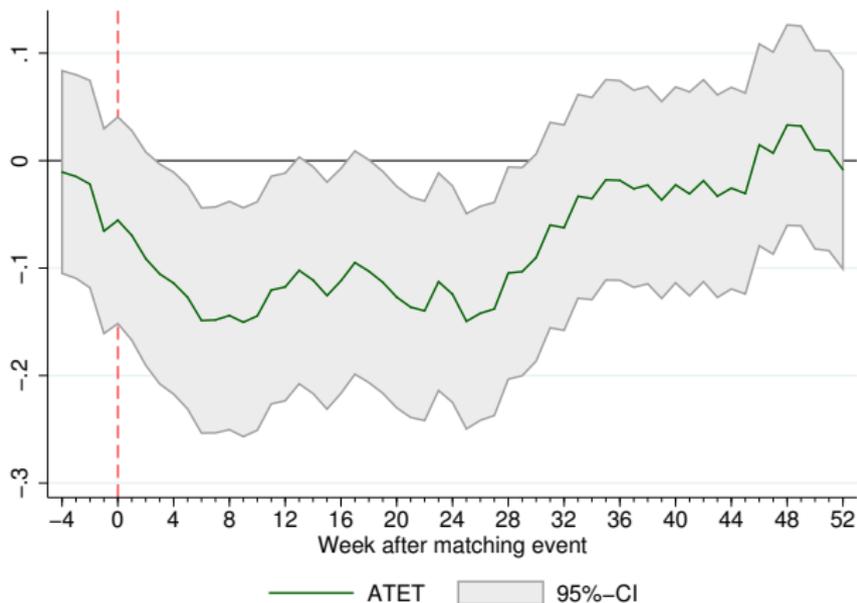


Figure: Impact on collecting UI benefits

UI benefits

	Collecting benefits			Amount monthly benefits		
	+1m	+6m	+12m	+1m	+6m	+12m
<i>Intention-to-Treat Estimates (ITT)</i>						
Invited	-0.027** (0.012)	-0.034*** (0.012)	-0.002 (0.011)	-47** (21)	-62*** (23)	2 (17)
<i>Treatment-on-the-Treated Estimates (ATET)</i>						
Attended	-0.114** (0.053)	-0.142*** (0.051)	-0.008 (0.047)	-197** (92)	-262*** (99)	10 (72)
<i>Control group mean and standard deviation of outcomes</i>						
Mean	0.63	0.38	0.28	803	575	332
Standard deviation	(0.48)	(0.49)	(0.45)	(890)	(995)	(666)

Note – $N = 8,361$; outcomes are measured one (“+1m”), six (“+6m”) or twelve (“+12m”) months after the speeddate. All regressions control for speeddate fixed effects as well as a set of individual characteristics and previous job characteristics; * significant at 10% level, ** significant at 5% level, *** significant at 1% level.

Employment and earnings

	Working			Amount monthly earnings		
	+1m	+6m	+12m	+1m	+6m	+12m
<i>Intention-to-Treat Estimates (ITT)</i>						
Invited	0.022* (0.012)	0.026** (0.012)	0.009 (0.012)	49* (25)	62** (30)	-2 (29)
<i>Treatment-on-the-Treated Estimates (ATET)</i>						
Attended	0.092* (0.050)	0.111** (0.051)	0.038 (0.051)	206* (108)	263** (127)	-7 (123)
<i>Control group mean and standard deviation of outcomes</i>						
Mean	0.41	0.57	0.63	662	1034	1195
Standard deviation	(0.49)	(0.49)	(0.48)	(1029)	(1193)	(1250)

Note – $N = 8,361$; outcomes are measured one (“+1m”), six (“+6m”) or twelve (“+12m”) months after the speeddate. All regressions control for speeddate fixed effects as well as a set of individual characteristics and previous job characteristics; * significant at 10% level, ** significant at 5% level, *** significant at 1% level. [Graph](#)

Type of work

	Work at temp agency			Other work		
	+1m	+6m	+12m	+1m	+6m	+12m
<i>Intention-to-Treat Estimates (ITT)</i>						
Invited	0.018* (0.010)	0.030*** (0.011)	0.006 (0.011)	0.007 (0.010)	0.002 (0.012)	0.005 (0.012)
<i>Treatment-on-the-Treated Estimates (ATET)</i>						
Attended	0.074* (0.042)	0.125*** (0.046)	0.026 (0.046)	0.028 (0.043)	0.008 (0.050)	0.021 (0.052)
<i>Control group mean and standard deviation of outcomes</i>						
Mean	0.21	0.24	0.26	0.21	0.35	0.39
Standard deviation	(0.41)	(0.42)	(0.44)	(0.41)	(0.48)	(0.49)

Note – $N = 8,361$; outcomes are measured one (“+1m”), six (“+6m”) or twelve (“+12m”) months after the speeddate. All regressions control for speeddate fixed effects as well as a set of individual characteristics and previous job characteristics; * significant at 10% level, ** significant at 5% level, *** significant at 1% level.

Job search behavior

What are mechanisms?

- Job offers by temp agencies
- Information on labor market opportunities
- Changes in job search behavior

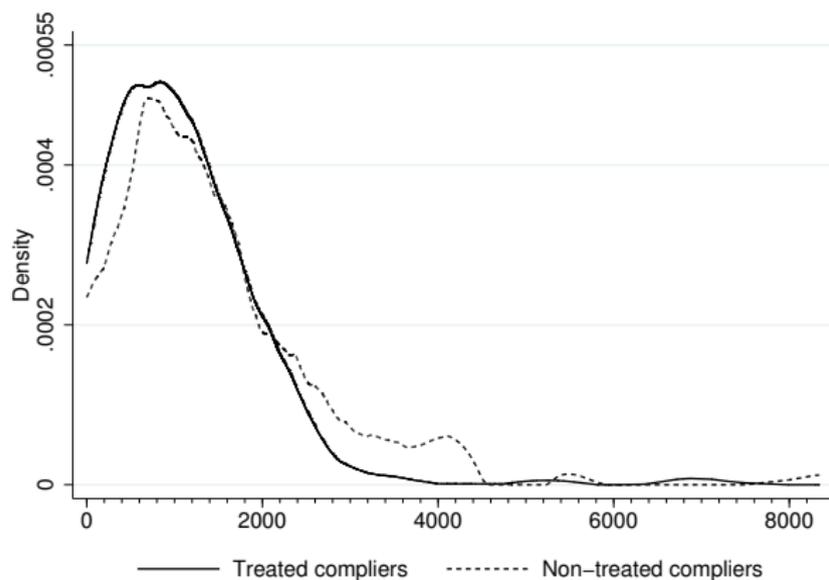
⇒ Use survey data to complement analysis

Job search behavior

	Job search motivation (1-5 scale)	# applications sent (last 4 weeks)	# job talk invitations (last 4 weeks)	Reservation wage (month, in euros)
<i>Intention-to-Treat Estimates (ITT)</i>				
Treatment	0.139** (0.069)	-0.153 (0.232)	0.052 (0.064)	-92* (47)
<i>Treatment-on-the-Treated Estimates (ATET)</i>				
Attendance	0.378** (0.190)	-0.415 (0.630)	0.142 (0.173)	-251* (128)
<i>Control group mean and standard deviation of outcomes</i>				
Mean	3.88	6.21	0.67	2217
SD	(1.11)	(3.82)	(1.04)	(1045)

Note – $N = 1,931$. Observations are weighted by inverse probability weights to account for selective response. All outcomes are measured 2 weeks after the speeddate. If individuals are employed at time of survey, outcomes are measured for last job search period. All regressions control for speeddate fixed effects as well as a set of individual characteristics; * significant at 10% level, ** significant at 5% level, *** significant at 1% level. ▶ Heterogeneous effects

Complier earnings distributions



Note: Mass point at zero earnings excluded.

Figure: Earnings (in euros) after 1 month

Compliers vs never-takers

	Never-takers	Compliers	p-value
Female	0.37 (0.48)	0.40 (0.49)	0.04
Age	39.23 (11.65)	44.88 (11.54)	0.00
Married	0.39 (0.49)	0.50 (0.50)	0.00
Primary/lower secondary education	0.21 (0.41)	0.17 (0.38)	0.00
Higher secondary education	0.59 (0.49)	0.55 (0.50)	0.03
College/university education	0.20 (0.40)	0.28 (0.45)	0.00
Benefits (prev. 3 months)	1342.67 (2083.56)	1499.89 (2314.86)	0.02
Earnings (prev. 3 months)	2593.76 (4619.07)	2032.48 (3000.71)	0.00
Workdays (prev. 3 months)	23.23 (22.52)	16.98 (21.84)	0.00
Perm. contract (prev. 3 months)	0.08 (0.27)	0.08 (0.27)	0.92
Observations	4,715	1,522	

Note – $N = 6,237$. All estimates are weighted by inverse treatment assignment probabilities. Column (1) and (2) report means, with standard deviations in parentheses.

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Heterogenous effects (ATET estimates)

	Type of event		Gender		Age	
	General	Sector	Female	Male	< 40	≥ 40
After 1 month	0.077 (0.055)	0.149 (0.110)	0.133* (0.078)	0.054 (0.064)	0.259** (0.107)	-0.011 (0.051)
After 6 months	0.056 (0.056)	0.336*** (0.122)	-0.022 (0.080)	0.191*** (0.066)	0.180* (0.102)	0.054 (0.055)
After 12 months	-0.023 (0.056)	0.282** (0.120)	-0.075 (0.081)	0.104 (0.065)	0.084 (0.100)	-0.004 (0.055)
Observations	6,982	1,379	3,204	5,157	4,082	4,279

	Unemployed		Education			Scope of work	
	< 3 mo.	≥ 3 mo.	Low	Medium	High	Part-time	Full-time
After 1 month	0.106* (0.057)	0.027 (0.100)	0.094 (0.125)	0.104 (0.068)	0.068 (0.087)	0.117 (0.088)	0.076 (0.060)
After 6 months	0.115** (0.058)	0.106 (0.109)	0.287** (0.136)	0.129* (0.069)	-0.045 (0.089)	0.124 (0.092)	0.107* (0.061)
After 12 months	0.042 (0.057)	0.027 (0.107)	0.281** (0.137)	-0.002 (0.069)	-0.035 (0.088)	-0.011 (0.093)	0.059 (0.060)
Observations	6,769	1,592	1,683	4,872	1,806	2,669	5,692

Note – All regressions control for speeddate fixed effects as well as a set of individual characteristics and previous job characteristics; educational levels are defined as follows: elementary school or less (low), high school or/and secondary vocational school (medium), college or university (high); * significant at 10% level, ** significant at 5% level, *** significant at 1% level.

Differences by complier propensity (ATET estimates)

Are compliers more likely to benefit from speeddates?

- Estimate complier propensity based on observables
- Test effect heterogeneity wrt propensity score

	After 1 month	After 6 months	After 12 months
Attendance	0.245 (0.158)	0.403** (0.161)	0.206 (0.159)
Compl. prop. \times attendance	-0.518 (0.439)	-0.984** (0.448)	-0.565 (0.443)
Complier propensity	0.002 (0.420)	-0.307 (0.429)	-0.834** (0.424)

Note – $N = 8,361$. Estimates are obtained through IV regressions using treatment assignment as an instrument for attendance. All regressions control for speeddate fixed effects as well as a set of individual characteristics and previous job characteristics; * significant at 10% level, ** significant at 5% level, *** significant at 1% level. [Go Back](#)

Cost-benefit analysis (after 12 months)

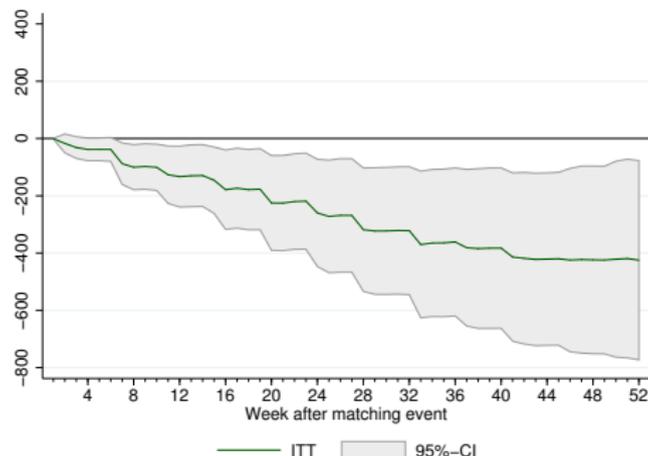


Figure: Cumulative UI benefits

- Benefits: reduction in UI payment
- Costs: personnel costs UI administration (~ 4 euros per assigned job seeker); no compensation for temp work agencies
- Net present value (assuming a discount factor of 10%): 405 euros per invited job searcher

Conclusion

Speeddates *effective* and *inexpensive* instrument

- Considerable impact on job finding in the short run
- Effects last for about one year
- Agency work has *no stepping stone* effects & *no crowding out* either
- Meetings influence job search behavior
⇒ Lower reservation wages, higher motivation
- Considerable reduction in benefit payments, while administrative costs are low
- Effects are largest for unemployed with lowest propensity to attend

Outcomes

	Control group	Treatment group	p -value	Observations
Attendance	0.00	0.24	0.00	8,361
Administrative outcomes (4 weeks after speeddate)				
Collecting benefits	0.63 (0.48)	0.60 (0.49)	0.02	8,361
Amount monthly benefits	802.56 (889.93)	744.93 (885.95)	0.01	8,361
Working	0.41 (0.49)	0.43 (0.50)	0.08	8,361
Amount monthly earnings	662.27 (1029.34)	710.67 (1072.33)	0.06	8,361
Work at temp agency	0.21 (0.41)	0.23 (0.42)	0.02	8,361
Survey response	0.23	0.23	0.99	8,361
Survey outcomes (2-3 weeks after speeddate)				
# temp agencies registered	3.41 (2.96)	3.72 (2.94)	0.05	1,931
Job search motivation (1-5 scale)	3.88 (1.11)	4.02 (1.02)	0.01	1,931
# applications sent (last 4 weeks)	6.21 (3.82)	6.05 (3.54)	0.43	1,931
# job talk invitations (last 4 weeks)	0.67 (1.04)	0.70 (1.01)	0.57	1,931
Reservation wage (month, in euros)	2216.53 (1045.27)	2092.15 (913.16)	0.02	1,931

Note – All estimates are weighted by inverse treatment assignment probabilities. All survey outcomes are additionally weighted by inverse probability weights to account for selective response. Column (2) and (3) report means, with standard deviations in parentheses. Column (4) shows p -values of two-sided difference-in-means tests.

Working

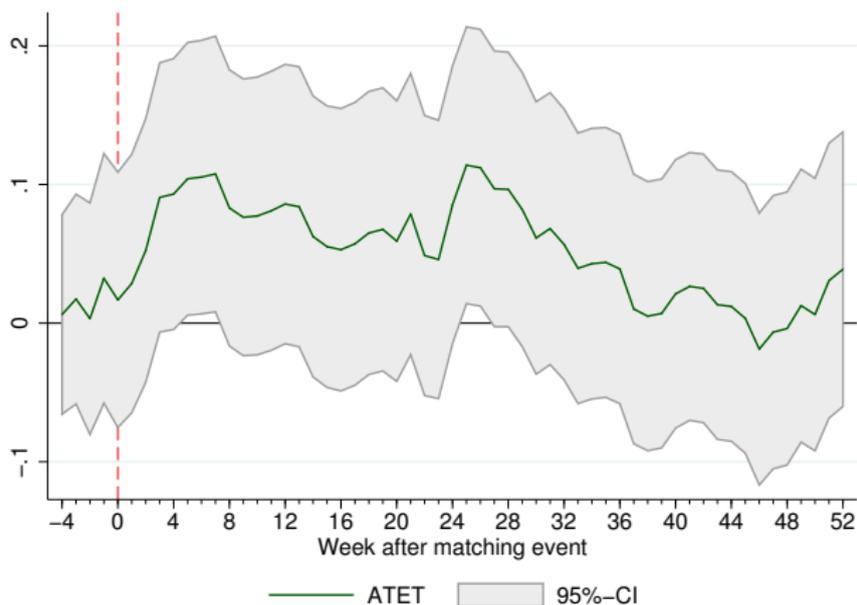


Figure: Impact on working [Go Back](#)

Having worked since speeddate

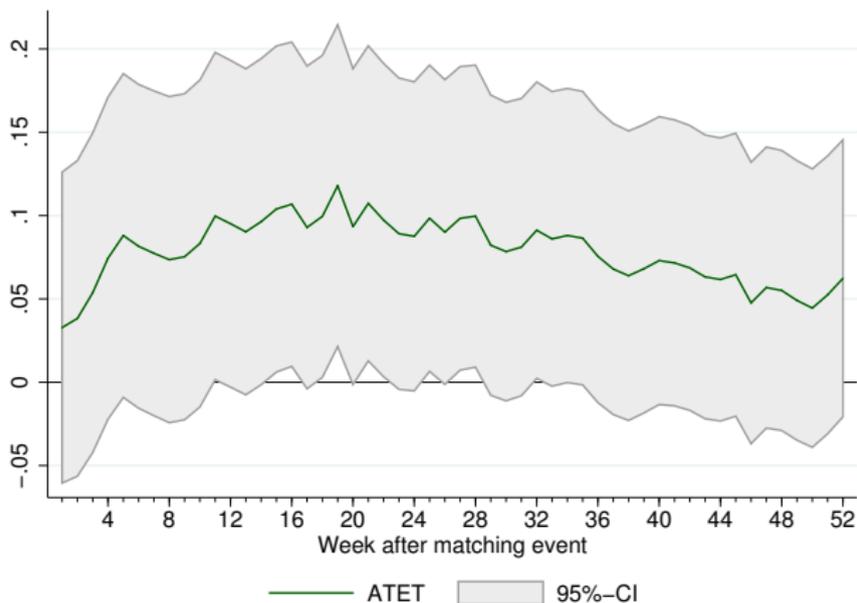


Figure: Impact on having ever worked since speeddate

Partial unemployment

- Job searchers with full-time UI claim may take up part-time job
- Benefits are proportional to remaining hours of unemployment

	Neither working nor benefits			Only benefits			Only working			Working and benefits		
	+1m	+6m	+12m	+1m	+6m	+12m	+1m	+6m	+12m	+1m	+6m	+12m
<i>Intention-to-Treat Estimates (ITT)</i>												
Invited	0.005 (0.008)	0.005 (0.010)	-0.001 (0.010)	-0.027** (0.012)	-0.032*** (0.010)	-0.008 (0.009)	0.022** (0.011)	0.028** (0.012)	0.003 (0.012)	-0.000 (0.009)	-0.002 (0.008)	0.006 (0.008)
<i>Treatment-on-the-Treated Estimates (ATET)</i>												
Attended	0.021 (0.035)	0.022 (0.041)	-0.005 (0.043)	-0.114** (0.053)	-0.133*** (0.045)	-0.032 (0.040)	0.093** (0.046)	0.120** (0.052)	0.014 (0.052)	-0.000 (0.039)	-0.009 (0.035)	0.024 (0.034)
<i>Control group mean and standard deviation of outcomes</i>												
Mean	0.12	0.16	0.19	0.47	0.26	0.17	0.25	0.46	0.52	0.16	0.12	0.11
Standard deviation	(0.32)	(0.37)	(0.39)	(0.50)	(0.44)	(0.38)	(0.43)	(0.50)	(0.50)	(0.37)	(0.32)	(0.31)

Note - $N = 8,361$. Outcomes are measured one ("+1m"), three ("+3m") or six ("+6m") months after the speeddate. All regressions control for speeddate fixed effects as well as a set of individual characteristics and previous job characteristics; * significant at 10% level, ** significant at 5% level, *** significant at 1% level.

Heterogenous impact on reservation wage

	Full sample	Duration of unemployment		Gender	
		< 3 months	≥ 3 months	Female	Male
ATET	-250.64* (128.26)	-148.27 (150.28)	-609.05*** (223.00)	8.59 (165.87)	-424.41** (178.35)
Observations	1,931	1,564	367	840	1,091

Note – Observations are weighted by inverse probability weights to account for selective response. All outcomes are measured 2 weeks after the speeddate. If individuals are employed at time of survey, outcomes are measured for last job search period. All regressions control for speeddate fixed effects as well as a set of individual characteristics; * significant at 10% level, ** significant at 5% level, *** significant at 1% level. [Go Back](#)

Full population vs. control group

	Full population	Control group	t-statistic
Female	0.46 (0.50)	0.39 (0.49)	5.94
Age	41.61 (12.11)	40.42 (11.87)	4.59
Married	0.43 (0.50)	0.42 (0.49)	0.73
Level of education	5.77 (2.86)	6.02 (2.61)	-4.39
Working (one month before)	0.39 (0.49)	0.39 (0.49)	-0.18
Working (two months before)	0.51 (0.50)	0.43 (0.50)	7.15
Working (three months before)	0.62 (0.48)	0.52 (0.50)	9.63
Observations	162,101	2,124	

Note – Column (1) and (2) report means, with standard deviations in parentheses. Column (3) shows t-statistics of difference in means tests. [Go Back](#)

Performance at speeddates

	# agencies spoken	Average duration talk	Further contact with agency
Female	-0.131 (0.227)	-0.737* (0.381)	-0.065 (0.041)
Age	-0.015 (0.012)	-0.038* (0.021)	0.004* (0.002)
Higher secondary education	-0.136 (0.246)	-0.052 (0.409)	0.104** (0.043)
College/university education	-0.268 (0.396)	-1.847*** (0.701)	0.020 (0.099)
Constant	4.383*** (0.655)	9.421*** (1.097)	0.416*** (0.102)
Population mean and standard deviation	3.54 (2.29)	7.26 (3.97)	0.60 (0.49)
Observations	669	672	700

Note – Observations are weighted by inverse probability weights to account for selective response. * significant at 10% level, ** significant at 5% level, *** significant at 1% level.

Displacement effects

Do treated job searcher take (in part) jobs of untreated job searchers?

- If so, control group would be worse off than without experiment
- Treatment effect would overstate actual impact

However, we find for control groups:

1. No significant differences by treatment share
2. No significant differences when compared to regions without speeddates

Displacement effects

DiD estimation comparing unaffected unemployed and control group

- Create panel of unemployed in all regions at all dates
- Unaffected unemployed matched to control group using PSM
- No significant difference in job finding (-0.009 [$SE = 0.019$])

Location Months	Doetinchem	Leeuwarden	Eindhoven	Venlo	Zwolle	Groningen
Jul-14	X					
Sep-14	X	X	X			
Nov-14		X				
Jan-15				X		
Feb-15					X	
Mar-15						X