

# Randomization as an Incentive Device

Evidence from Public Procurement of Immigrant Integration Services

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# Two seemingly separate challenges

- How to design efficient contracts in public procurement?
  - governments routinely buy services and infrastructure from private providers
    - 13% of GDP in OECD countries, 19% in Finland, in 2021
  - challenge: quality typically unverifiable, sometimes unobservable
    - contracts incentivize cost minimization at the expense of service quality

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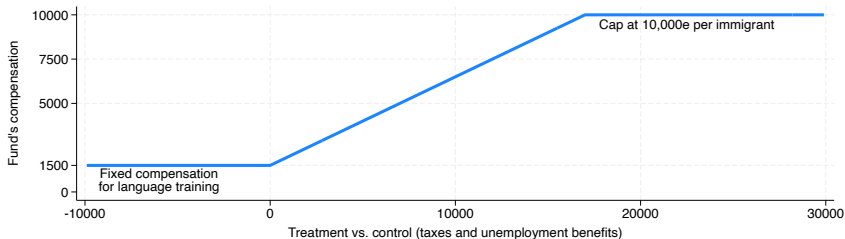
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  - governments routinely buy services and infrastructure from private providers
    - 13% of GDP in OECD countries, 19% in Finland, in 2021
  - challenge: quality typically unverifiable, sometimes unobservable
    - contracts incentivize cost minimization at the expense of service quality
- How to identify causal relationships?
  - challenge: constructing plausible counterfactual often difficult
- Our argument: **sometimes, these are the same challenges**
  - quality = the effect of a service on something the government cares about
    - both can be solved with randomized research designs

# This paper

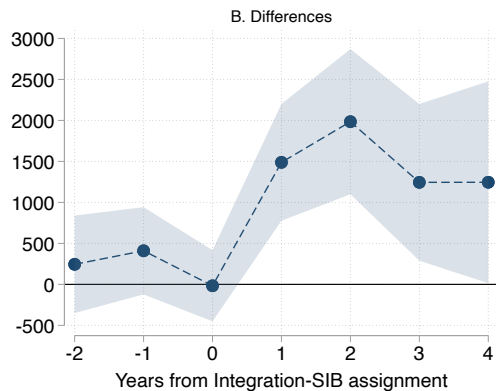
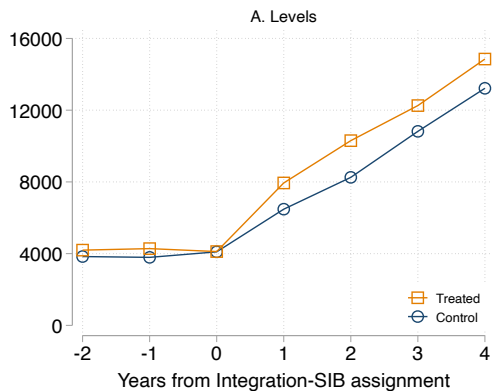
- We study a new service (“Integration SIB”) for immigrant job seekers
  - job-specific language training and job placements contracted to a private provider
  - private provider covers upfront costs of the program, compensated based on performance

# This paper

- We study a new service (“Integration SIB”) for immigrant job seekers
  - job-specific language training and job placements contracted to a private provider
  - private provider covers upfront costs of the program, compensated based on performance
- Innovation: **contracted performance based on a randomized research design**
  - target: cumulative unemployment benefits and income taxes over a 3-year follow-up
  - randomized assignment to the private provider ( $N = 3,662$ )
  - performance measured relative to the control group (Public Employment Services, PES)



# Main result: Effect on earnings



Pre-registered primary outcome: **cumulative earnings increased 4,549 euros (SE: 1,177) or 15 percent** during the first three years after randomization.

# Contribution 1: Public procurement

- Earlier work: contract theory
  - unverifiable service quality limits the benefits of outsourcing (Hart, Shleifer, Vishny 1997)
  - yardstick competition can improve contracts' incentive structure (Shleifer 1985)
  - imperfect measures may create harmful multitasking (Holmström and Millgrom 1991)
- Earlier work: effects of outsourcing public services
  - empirical results vary widely by context (Andersson et al. 2019; Fabre and Straub 2023)
  - outsourcing active labor market policies (ALMP) has little effect (Benmarker et al. 2013, Krug and Stephan 2013, Behaghel et al. 2014, Rehwald et al. 2017, Crépon 2018)
- Our contribution
  - **first to study incorporating randomization into a contract**
  - use non-contracted outcomes to examine unintended consequences
  - first to show that outsourcing can improve quality in ALPM

## Contribution 2: Immigrant integration programs

- Earlier work
  - integration programs help immigrants (Åslund and Johansson 2011, Joonas and Nekby 2012; Sarvimäki and Hämäläinen 2016, Foged et al., 2024; Arendt 2022; Bratu et al. 2023, Humlum et al., 2023, Dahlberg et al. 2024) and their children (Foged et al., 2023, Pesola and Sarvimäki, 2024)
  - all studied interventions focused on newly arrived immigrants, largely refugees
- Our contribution
  - **first evidence on an intervention focused on high-skilled immigrants** with longer residency
  - exceptionally clean identification and large number of participants

# Outline

1. Design and data
2. Results
3. Mechanisms
4. Conclusions

# Design

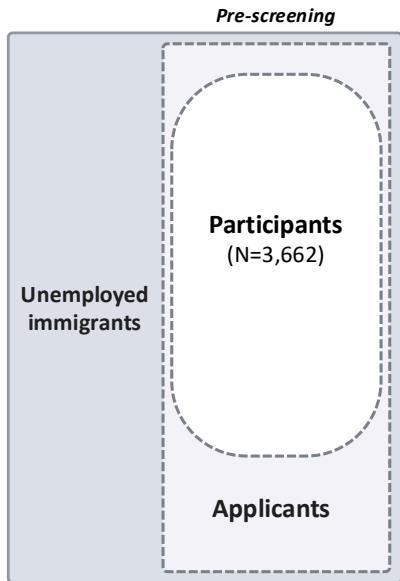
**Unemployed  
immigrants**

# Design



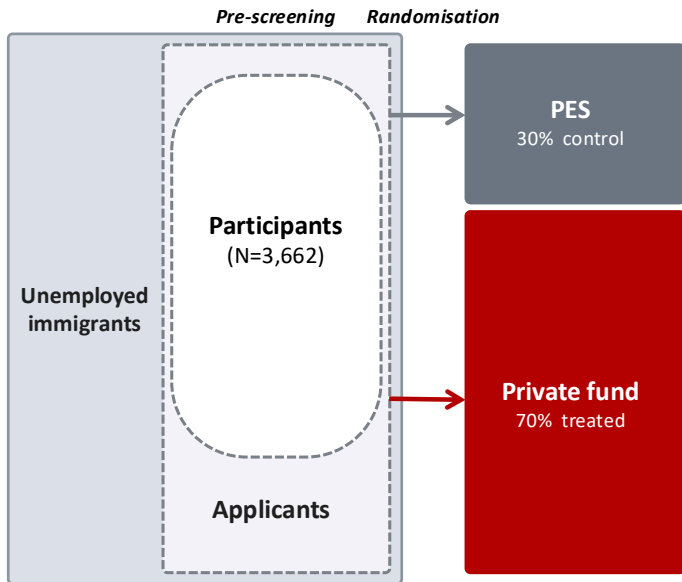
1. Unemployed immigrants apply online.

# Design



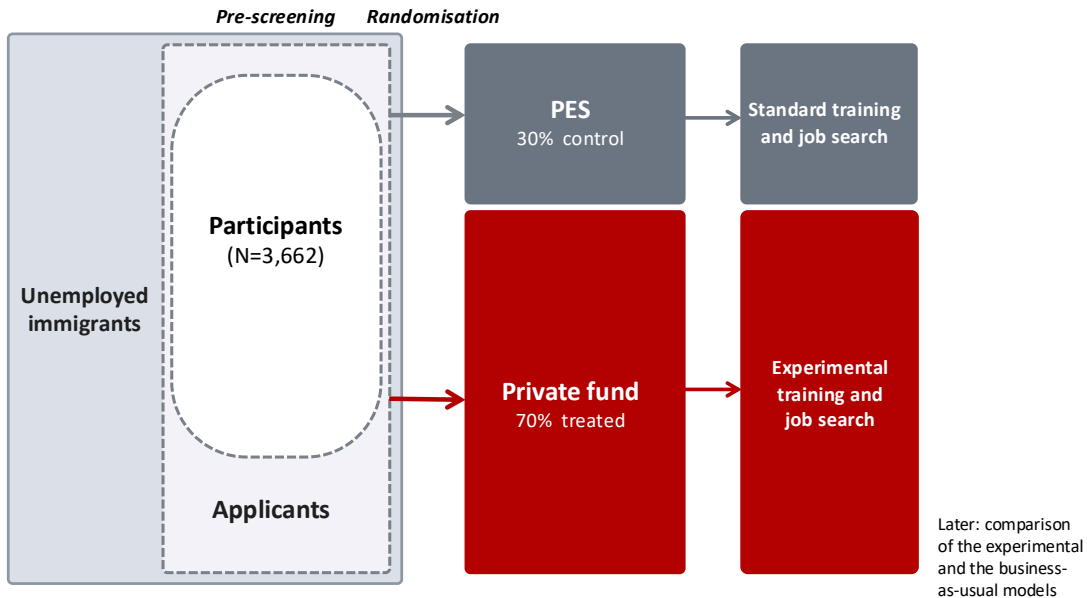
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# Design



1. Unemployed immigrants apply online.
2. The service provider briefly interviews candidates and PES verifies eligibility.
3. PES randomizes into treatment and control

# Design



# Data and empirical approach

Register-based data on everyone who applied between 2017-2019 ( $N = 3,662$ )

- treatment status, income, employment, PES, education

Approach: RCT, intention-to-treat estimates from

$$Y_{it} = \alpha + \beta_t \text{Treated}_i + \theta_{j(i)} + X_i \gamma + \varepsilon_{it}$$

- $\theta_{j(i)}$ : fixed-effect for randomization event
- $X_i$ : age, gender and an indicator for having an integration plan (unnecessary for identification, but increases precision)

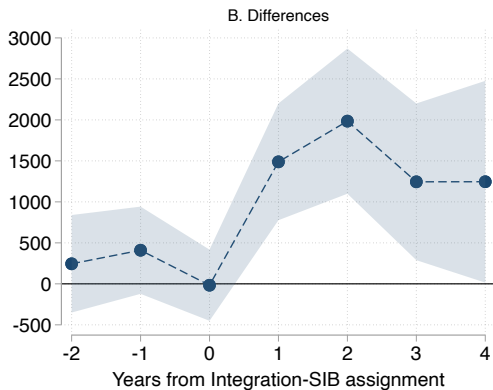
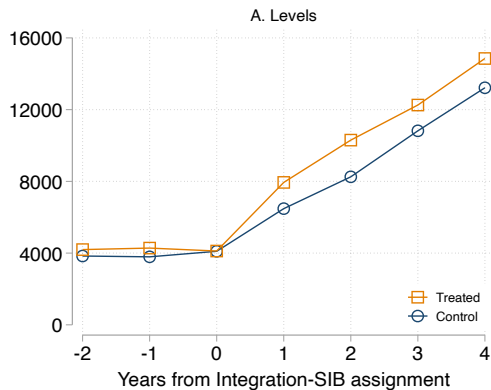
Balance Table

- Pre-analysis plan (AEARCTR-0012519)
  - primary outcome: annual labor earnings  
short-run: years 1-3, medium-run: years 4-5, winsorized at the 99th percentile

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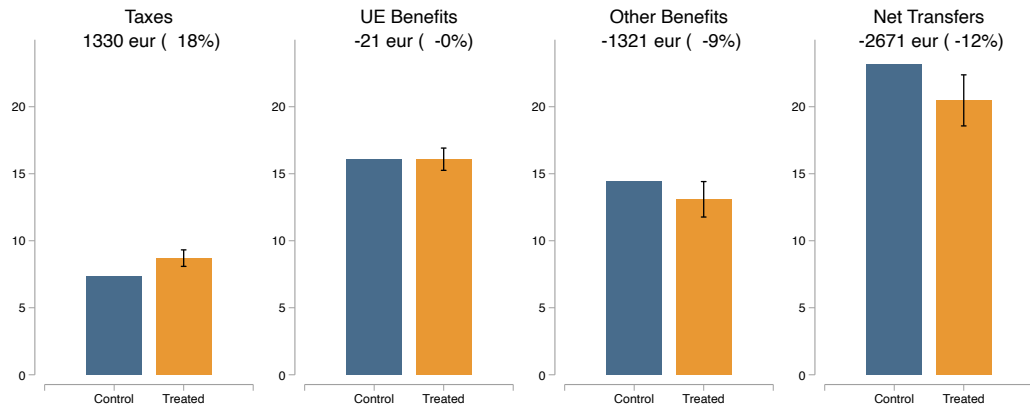
## Recap: Effect on earnings



Pre-registered primary outcome: **cumulative earnings increased 4,549 euros (SE: 1,177) or 15 percent** during the first three years after randomization.

employment

## Effect on Taxes and Transfers



**On average, the treatment group created a 2,671 euros or 12 percent lower cumulative net burden on public finances over the three-year follow-up period than the control group.**

The short-term gain for the government was approximately €5m.

Costs: €7.4m paid to the private fund. Savings: €7.1m in transfers + €5.5m in ALPM expenditures.

# Treatment effect heterogeneity and job quality

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	Annual earnings
<i>A: Average Treatment Effects</i>	
Treated	1,548*** (385)
<i>B: Treatment Effects by Job Seeker's Skill</i>	
Treated	729* (412)
Treated × College degree	2,608*** (917)
Control mean	9,732
Non-college	8,812
College	12,088
Observations	10,667

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## Treatment effect heterogeneity and job quality

	Annual earnings	Occupation quality		Firm quality	
		Expected earnings	Share with college deg.	Co-worker av. earnings	log(Sales per worker)
<i>A: Average Treatment Effects</i>					
Treated	1,548*** (385)	1,229** (423)	0.028** (0.009)	1,511*** (580)	0.088** (0.038)
<i>B: Treatment Effects by Job Seeker's Skill</i>					
Treated	729* (412)				
Treated × College degree	2,608*** (917)				
Control mean	9,732	29,304	0.159	22,506	11.3
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Observations	10,667	4,071	4,071	6,409	5,256

# Treatment effect heterogeneity and job quality

[more results](#)

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<i>B: Treatment Effects by Job Seeker's Skill</i>					
Treated	729* (412)	150 (380)	0.005 (0.008)	69 (637)	0.057 (0.047)
Treated × College degree	2,608*** (917)	2,726** (1,264)	0.054* (0.030)	4,857*** (1,430)	0.120 (0.089)
Control mean	9,732	29,304	0.159	22,506	11.3
Non-college	8,812	27,084	0.098	20,220	11.3
College	12,088	34,742	0.308	28,314	11.4
Observations	10,667	4,071	4,071	6,409	5,256

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# Mechanisms

No evidence on effects being driven by displacement

- effects sizes similar in labor markets with more vs less participants [link](#)

No evidence on multitasking

- positive effects also on non-contracted outcomes [link](#)

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- positive effects also on non-contracted outcomes [link](#)

Hypothesis: private fund responded to incentives to find new approaches

# What did the private fund do differently from PES?

## Qualitative evidence on services offered by the private fund

(Karinen et al., 2024)

- on-the-job training and language training targeted to specific jobs
- Document analysis + 35 in-depth interviews  
(PES employees, training providers, investors, fund personnel, government officials)
- take-away: the private fund invested heavily in match-making

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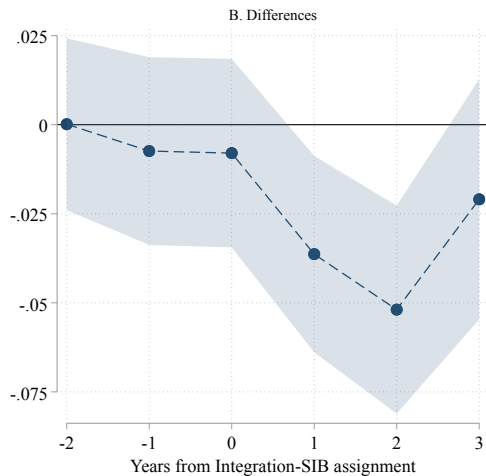
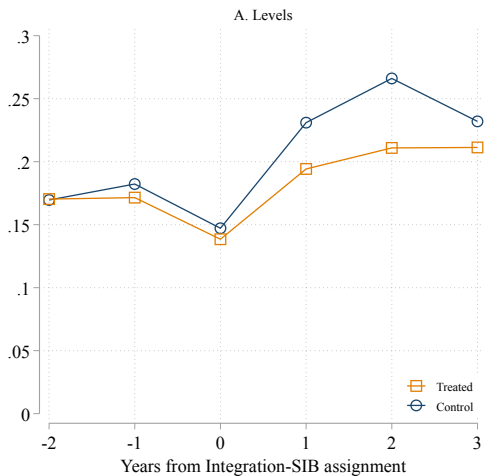
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## Quantitative evidence on education, training and job referrals

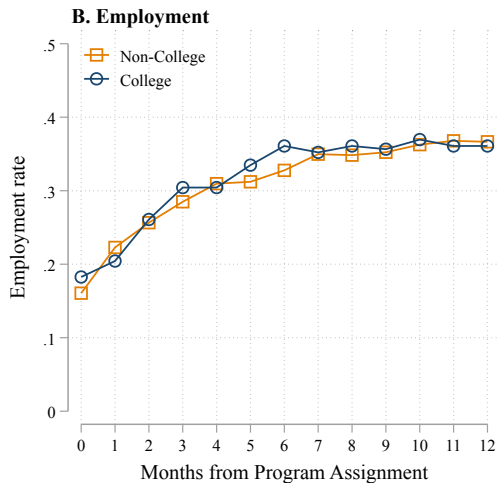
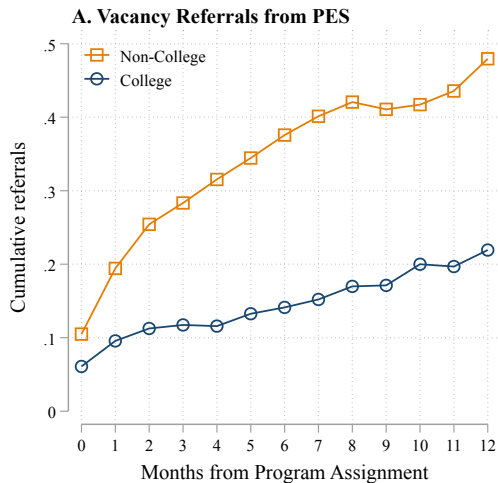
- strengths: detailed data on school enrollment (for both groups) and PES services and referrals (for the control group)
- limitation: no internal data from the private provider

# Participation in Secondary Education



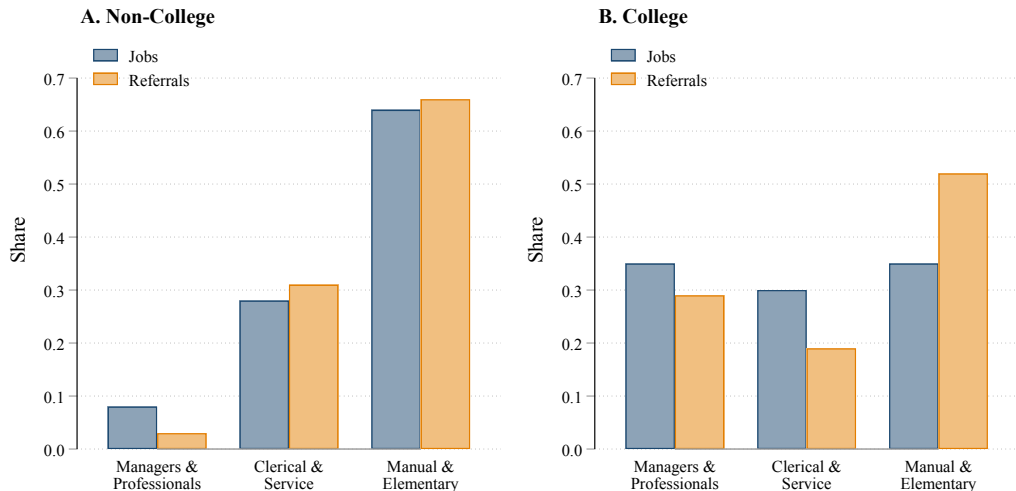
Treatment reduces enrollment in secondary education by 5 percentage points ( $\approx 20\%$ ) in the second year after randomization.

# Referral Quantity and Employment (control group)



College-educated immigrants in the control group receive substantially fewer job referrals from PES than their less-educated peers; employment rates are similar across both groups.

# Referral Quality (control group)



PES referrals for college-educated immigrants in the control group appear poorly matched to their qualifications.

# Conclusions

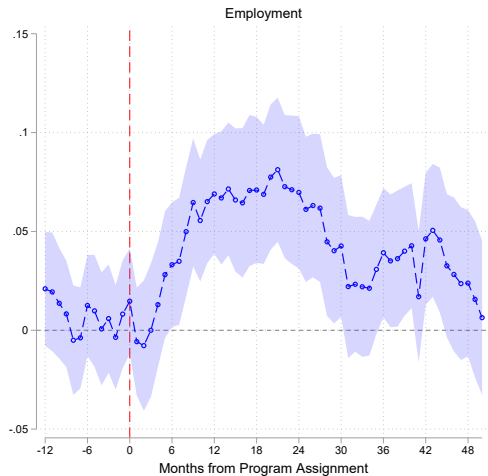
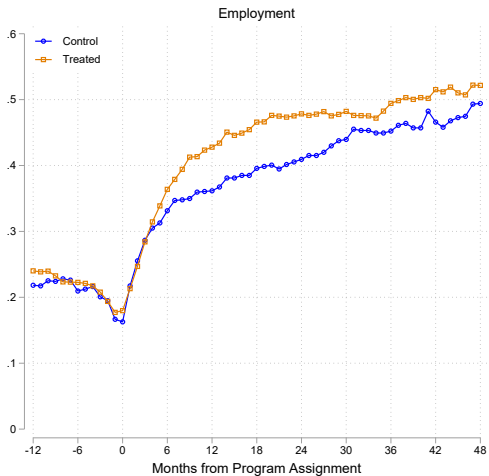
- Our big idea: **unverifiable quality is often an identification problem**
  - quality = the effect of a service on something one cares about
- Randomization protocols can extend the scope of efficient contracts
- The Integration SIB experiment is apparently the first attempt to implement this idea in public procurement
  - proof of concept: such contracts can actually be written (and legally implemented)
  - promising results: 15% increase in participants' earnings, 12% reduction in net transfers
  - similar approaches likely feasible also in other contexts
- Such contracts can also create information externalities
  - allows governments and other service providers to learn what works and for whom
  - here: investing in match-making and highly educated immigrants can have large returns

# Appendix

## Descriptives: test for balance prior to program assignment [back](#)

	Control (1)	Treated (2)	$\beta^{SIB}$ (3)	SE (4)
Assignment Year	2018.3	2018.3	-0.00	(0.00)
Age	38.50	38.85	0.43	(0.35)
Woman	0.41	0.42	0.00	(0.02)
Married	0.56	0.59	0.02	(0.02)
Single	0.25	0.22	-0.03**	(0.01)
Divorced	0.17	0.18	0.01	(0.01)
Years in Country	6.87	6.84	0.08	(0.19)
Days Unemployed	214	232	18*	(11)
Earnings (t-1)	3792	4279	446	(297)
Social Benefits (t-1)	10394	9990	-274	(293)
Unemployment Benefits (t-1)	5749	5639	-46	(166)
Net Transfers (t-1)	-8759	-8286	346	(300)
Work Days (t-1)	74.82	82.54	7.43*	(4.49)
Enrolled in Education Program (t-1)	0.18	0.17	-0.01	(0.01)
Enrolled in Secondary Program (t-1)	0.15	0.14	-0.01	(0.01)
N	1026	2636		

# Employment [back](#)



## More results

- More treatment effect heterogeneity
  - effects on earnings larger for high-skilled and younger participants; no differences by gender or time since immigration [link](#)
- More job quality outcomes
  - estimates consistent with main findings but mostly statistically insignificant [link](#)



# Heterogeneity in Earnings Effects [back](#)

	(1)	(2)	(3)	(4)
<b>Panel A: Earnings</b>				
Treated	4367*** (1405)	5036*** (1541)	4694*** (1168)	2243* (1239)
Treated X Recent	1173 (3246)			
Treated X Woman		-772 (2386)		
Treated X Age			-226* (136)	
Treated X High Edu				7893*** (2709)
Mean	28936	29181	29181	29177
N	3426	3645	3645	3550
Cluster FE	✓	✓	✓	✓

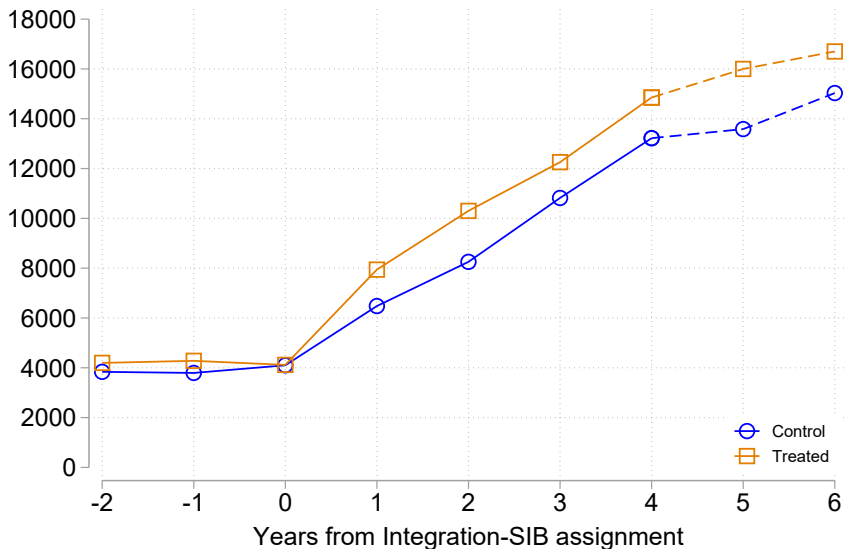
## Heterogeneity in Employment Effects [back](#)

	(1)	(2)	(3)	(4)
<b>Panel B: Employment (days)</b>				
Treated	56*** (15)	52*** (17)	57*** (12)	48*** (13)
Treated X Recent	-7 (31)			
Treated X Woman		13 (27)		
Treated X Age			-2 (1)	
Treated X High Edu				21 (27)
Mean	386	393	393	391
N	3426	3645	3645	3550
Cluster FE	✓	✓	✓	✓

# Treatment Effects on Workplace Outcomes [back](#)

	(1) Co-worker Earnings	(2) AKM Firm FE	(3) AKM Co-worker FE	(4) Immigrant Co-workers	(5) Same-origin Co-workers	(6) Immigrant Manager	(7) Same-origin Manager
<b>Panel A: Baseline treatment effect</b>							
Treated	1,512*** (580)	0.001 (0.008)	0.002 (0.008)	-0.003 (0.011)	0.003 (0.008)	-0.007 (0.014)	0.000 (0.010)
Outcome mean	22,506	-0.074	-0.226	0.334	0.086	0.221	0.097
N	6,599	5,771	6,340	6,599	6,599	6,706	6,706
<b>Panel B: Treatment Effects by Job Seeker's Skill</b>							
Treated	69 (637)	-0.009 (0.009)	-0.013 (0.009)	0.004 (0.012)	0.007 (0.010)	0.005 (0.017)	0.002 (0.013)
Treat × College	4,857*** (1,430)	0.026 (0.017)	0.054*** (0.019)	-0.022 (0.024)	-0.013 (0.020)	-0.047 (0.036)	-0.008 (0.024)
Outcome mean	22,506	-0.074	-0.226	0.334	0.086	0.221	0.097
Non-college	20,220	-0.090	-0.249	0.346	0.099	0.240	0.112
College	28,314	-0.038	-0.171	0.304	0.052	0.175	0.059
N	6,409	5,603	6,159	6,409	6,409	6,514	6,514

## No sign of reversal in earnings over time [back](#)



# Displacement Effects [back](#)

- ALMPs could plausibly have displacement effects that affect results interpretation
- Limited scale (3,600+ participants), unlikely to be only displacements effects
- To evaluate, we leverage variation in program roll-out across labor markets

$$Y_{it} = \gamma_0 + \gamma_1 \text{Treated}_i * \text{Intensity}_{k(i)} + \gamma_2 \text{Treated}_i \theta_{j(i)} + X_i \gamma + \varepsilon_{it} \quad (1)$$

where  $\text{Intensity}_{k(i)}$  is the share of LF in region  $k$  participating in the program

- $\gamma_1 > 0$  would be consistent with displacement effects, assuming intensity is uncorrelated with other factors that affect the effectiveness of program

## Roll-out by Labor Markets [back](#)

Region	(1) Labor Force	(2) Immigrants	(3) Immigrant Share	(4) Participants	(5) Participants per 1000	(6) Participants per 1000 Immigrants
Uusimaa	843571	64704	0.08	3034	3.597	46.890
Varsinais-Suomi	227000	9362	0.04	253	1.115	27.024
Pohjois-Karjala	74397	1606	0.02	73	0.981	45.455
Pirkanmaa	245371	7058	0.03	187	0.762	26.495
Pohjois-Pohjanmaa	186439	3388	0.02	64	0.343	18.890
Pohjanmaa	115360	4969	0.04	23	0.199	4.629
Kaakkois-Suomi	136679	5509	0.04	17	0.124	3.086
Keski-Suomi	126637	2525	0.02	11	0.087	4.356
Satakunta	101175	2677	0.03	0	0.000	0.000
Häme	178050	5365	0.03	0	0.000	0.000
Etelä-Savo	61888	1293	0.02	0	0.000	0.000
Pohjois-Savo	114775	2379	0.02	0	0.000	0.000
Etelä-Pohjanmaa	89165	1770	0.02	0	0.000	0.000
Kainuu	33192	595	0.02	0	0.000	0.000
Lappi	82528	1698	0.02	0	0.000	0.000
Ahvenanmaa	15094	1711	0.11	0	0.000	0.000

# Lack of Displacement: Weakly Decreasing in Treatment Intensity back

	(1) Pooled	(2) Pooled	By Region	
			(3) Uusimaa	(4) Rest-of-Finland
<b>Panel A: Earnings</b>				
Treated	6489.3** (3089.3)	5355.0** (2104.8)	4615.2*** (1321.3)	5355.0** (2162.9)
Treated X Intensity	-559.6 (959.8)			
Treated X Uusimaa		-739.9 (2487.2)		
Outcome mean	29180	29193	29583	27286
N	3,645	3,640	3,022	618
<b>Panel B: Months of Employment</b>				
Treated	2.578* (1.416)	2.437** (1.062)	1.640*** (0.500)	2.437** (1.091)
Treated X Intensity	-0.276 (0.425)			
Treated X Uusimaa		-0.798 (1.174)		
Outcome mean	15.063	15.069	15.107	14.880
N	3,645	3,640	3,022	618