The influence of employment services on entering paid employment and health among welfare recipients

- **an instrumental variable approach**

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Introduction

Municipalities
- Need for more insight in effectiveness of employment services

Randomized controlled trial?
- Not possible due to ethical, financial and practical reasons

Observational study?
- Prone to confounding by indication

Quasi-experimental study
- Instrumental Variable: induces variation in allocation to treatment of control group
  - Exogenous variable that has no effect to the outcome (other than via the treatment)
- Using register data
  - no data collection needed – low costs
  - Large number of observations – heterogeneous treatment effects

Introduction

Employment services of the municipality of the city of Rotterdam

Case manager

- **Matching** – direct matching of clients with vacancies, even if that work is not directly in line with education or work experience
- **Prematching** – address barriers for entering paid employment, job seach support tailored to meet the needs of the client
- **Social Activation** – increasing social participation (voluntary work, participation in organised activities, informale care)

Case manager – refers client to one of the three departments

Aims

We use the exogenous variation induced by referral behavior of case manager to estimate the causal effect of

- Employment services on entering paid employment and health
- Entering paid employment on health

In addition, we determine whether the effects of employment services and entering paid employment differed between person, depending on age, sex, education, health, and employment history

Register data

Registries of the municipality

- Referral to Matching, Prematching, Social Activation
- Unique number of case manager that referred a client to one of the three departments

Statistics Netherlands

- Sociodemographic characteristics
- Household characteristics
- Medication use (number of diseases, health index)
- Employment status
  - Employment history before application for welfare
  - Enter paid employment

Methods

A judge leniency instrumental variable (IV) design

Instrumental variable = preference of case manager to refer to MA/PM/SA

Assumptions

Case managers who are responsible for assignment, are not involved in the employment services
→ Preferences of case managers are not related to outcome measures

Clients are randomly assigned to case managers
→ Preference of case managers are not related to individual characteristics of clients.

Instrumental Variable model

$$Y_i = \theta_1 MA_i + \theta_2 SA_i + \theta'_3 x_i + u_i \qquad \textit{(main equation 1)}$$

$$MA_i = \gamma_1 \psi_i^{(MA)} + \gamma'_2 x_i + vi \qquad \textit{(sub equation 1.a)}$$

$$SA_i = \delta_1 \psi_i^{(SA)} + \delta'_2 x_i + w_i \qquad \textit{(sub equation 1b)}$$

Ψ_i= preference of case manager of client I to refer clients to Matching/Social Activation

Calculation of Ψ_i

Multinomial logistic regression analysis → Predict referral based on individual characteristics of client

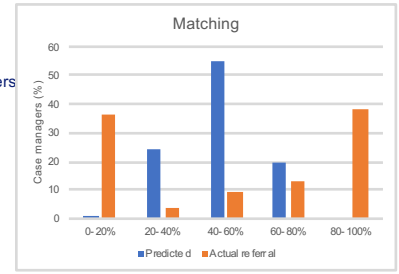
Residual = difference between predicted probability of referral and actual referral

$$\Psi_i = \frac{\text{sum of residuals of a clients of the case manager (minus error term of client i)}}{\text{number of clients of the case manager (minus 1)}}$$

Referral behavior of case managers (n=100)

Large difference between **predicted referral** (based on characteristics of clients of case managers) and **actual referral** of case managers

Preferences of case managers influence participation in Matching of welfare recipients



Descriptives

Matching clients

More often younger, higher educated, no disease, employed in previous years

Social Activation clients

More often older, lower educated, at least one disease, no employment

Matching clients more often enter paid employment

	Matching N=2888 %	Prematching N=2043 %	Activation N=1057 %	Start employment N=1535 %
Age (years)				
18-30	34	24	5	36
30-45	40	50	30	43
45-55	19	19	30	16
55-65	8	7	35	5
Female	44	53	49	48
Educational level				
Low	25	33	53	21
Intermediate	52	33	22	52
High	16	9	4	20
missing	7	26	20	8
No disease	65	59	36	67
One disease	23	22	24	23
Two diseases	8	12	18	7
At least three diseases	3	8	22	3
Months worked in three preceding years				
0	25	52	70	21
>0 & < 12 months	27	18	13	27
>12 & <24 months	28	16	8	30
>24 months	20	14	10	23
Enter employment within one year after referral	44	12	2	100

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Results

	Matching	Social Activation
	b(se)	b(se)
Employment participation	0.27 (0.02)*	-0.00 (0.03)
Health index (higher=better)	0.04 (0.01)*	-0.04 (0.03)
Number of diseases	-0.29 (0.04)*	0.17 (0.12)
Psychological disorder	-0.05 (0.01)^	-0.02 (0.03)
Psychotic disorder	-0.01 (0.01)^	0.02 (0.02)

Matching compared to Prematching:

- positive influence on entering paid employment and (psychological) health

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Heterogenous treatment effects

		Health index (higher = better)	
		Matching b(se)	Social Activation b(se)
Age	18-30 years	0.04 (0.02)*	0.08 (0.14)
	30-45 years	0.03 (0.01)*	-0.07 (0.01)*
	45-65 years	0.08 (0.02)*	-0.02 (0.04)
Education	Low	0.05 (0.02)*	-0.05 (0.04)
	Mid	0.03 (0.01)*	-0.02 (0.06)
	High	-0.01 (0.02)	-0.39 (0.10)*

Matching compared to Prematching:

- health improvement especially among older age group and lower educated persons

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Effect of entering paid employment

Entering paid employment has a positive influence on health.

Decrease in number of diseases (psychological disorders, psychotic disorders, and cardiovascular disease)

	Enter paid employment
	b(se)
Health index (higher=better)	0.13 (0.03)*
Number of diseases	-0.95 (0.14)*
Psychological disorder	-0.19 (0.04)*
Psychotic disorder	-0.08 (0.02)*
Cardiovascular disease	-0.09 (0.03)*
Diabetes	-0.03 (0.02)^
Respiratory illness	-0.04 (0.04)

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Conclusion

Exogenous variation induced by referral behavior of case managers was used to estimate

- The causal effect of employment services on employment and health
- The causal effect of employment on health.

- Positive effect of Matching on entering paid employment and health
- Positive effect of entering paid employment on health

- This holds for that part of the welfare recipients whose participation in Matching or Social Activation (compared to Prematching) was effected by the instrument!

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