Health service provision and worker productivity (WP4)

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Motivation

- Explore spillovers from public sector intangible investment to outcomes elsewhere in the economy
- Specifically, public sector investment in health outcomes
 - Consider health assets from the output (rather than expenditure) side
- We know some things about
 - Links between health and labour market outcomes
 - Links between health provider inputs and quality of outcomes
- Less about
 - Links between quality of health provision and market sector performance
- Here we look at the quality of public health care and associations with workers' performance
 - Does NHS quality affect the workplace performance of workers with health problems

Data

- UK Labour Force Survey
 - Lots of information on individuals' characteristics and labour market outcomes
 - Including detail on health issues (controls)
 - And self assessment of the extent to which these limit activity, as well as sickness absence (outcomes that affect workplace/job performance)
 - Importantly it also includes information on the geographical location of the residence of the respondent
- NHS Trust statistics
 - Waiting times and mortality indicators for hospitals in England
 - Hospital geographical location(s)

Models of limitations due to health problems

HC = 1 if health conditions/illnesses lasting 12 months or more

Limitations due to health problems (4 performance indicators):

- X = 1 if 1. absent from work in reference week due to sickness
 - 2. health problems affect the amount of paid work that can be done
 - 3. health problems affect the kind of work that might be done
 - 4. health problems limit activity

Measures of the quality of health care provision for LFS respondents

- Find nearest hospital for each LFS respondent
 - But only observe Local Authority District (LAD) of residence (in England there are 326 of these)
 - Grid references for hospital postcodes (139 general hospitals) and 171372 output areas (OA) using population weighted centroids
 - Find minimum distance hospital for each OA
 - Generate LAD hospital quality indicators as population weighted averages of OA hospital quality indicators

Identification issues

- Choice: Private health care and right to choose hospital
- Distance: as the crow flies

Population Density



Source: ONS, NOMIS.

Nearest Health Trust



Median waiting time (referral to treatment)



Mean waiting time (referral to treatment)



Unexpected hospital mortality rate



Limitations due to health problems: estimates

	sickness	limit amount	limit kind	limit
DPV	absence	of paid work	of paid work	activity
individual demographics				
female	0.107***	0.034**	-0.063***	0.102***
	(0.020)	(0.014)	(0.013)	(0.012)
age	-0.003	0.006	0.013***	0.009***
	(0.005)	(0.004)	(0.004)	(0.003)
age squared	0.000	-0.000**	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
partnership	-0.033**	-0.052***	-0.077***	0.011
	(0.017)	(0.014)	(0.014)	(0.012)
children under 5	0.023	0.022	-0.006	-0.038
	(0.041)	(0.034)	(0.031)	(0.026)
female * children under 5	0.015	-0.027	-0.042	0.081**
	(0.051)	(0.042)	(0.040)	(0.035)
tertiary education	-0.093***	-0.206***	-0.199***	-0.124***
	(0.023)	(0.016)	(0.015)	(0.013)
external factors				
winter	0.103***	-0.006	-0.001	0.017***
	(0.013)	(0.007)	(0.006)	(0.006)
unemployment rate (local)	-0.011	-0.028*	0.014	-0.010
	(0.021)	(0.014)	(0.012)	(0.013)
year and local area fixed effe	ects included			
sample size: 126816				
pseudo Rsquared	0.048	0.113	0.106	0.087
robust std errs in brackets, clustering by Local Authority District				tbc

Limitations due to health problems: estimates (continued)

	sickness	limit amount	limit kind	limit
DPV	absence	of paid work	of paid work	activity
health problems (base = ha	nds or arms)			
legs or feet	0.094***	0.098***	0.051	0.163***
	(0.022)	(0.034)	(0.031)	(0.026)
back or neck	0.105***	0.274***	0.288***	0.250***
	(0.022)	(0.031)	(0.029)	(0.026)
seeing	0.094*	-0.009	0.101**	0.070
	(0.050)	(0.049)	(0.049)	(0.046)
hearing	-0.002	-0.293***	-0.212***	-0.226***
	(0.038)	(0.039)	(0.037)	(0.031)
speech	0.257**	0.066	0.057	-0.148
	(0.102)	(0.108)	(0.114)	(0.097)
disfigurement, skin, allergies	-0.040	-0.482***	-0.416***	-0.289***
	(0.029)	(0.034)	(0.032)	(0.028)
chest or breathing	0.026	-0.420***	-0.389***	-0.082***
	(0.022)	(0.026)	(0.025)	(0.022)
cardiovascular	0.029	-0.364***	-0.475***	-0.176***
	(0.021)	(0.028)	(0.028)	(0.022)
stomach, liver, kidney, digesti	0.164***	-0.092***	-0.231***	0.044*
	(0.025)	(0.029)	(0.030)	(0.025)

Limitations due to health problems: estimates (continued)

	sickness	limit amount	limit kind	limit
DPV	absence	of paid work	of paid work	activity
health problems (base = hands or arms)				
diabetes	0.006	-0.316***	-0.362***	0.095***
	(0.028)	(0.032)	(0.033)	(0.029)
depression, anxiety	0.294***	0.120***	-0.057*	0.314***
	(0.025)	(0.032)	(0.032)	(0.026)
epilepsy	0.100	0.075	0.196***	0.275***
	(0.063)	(0.056)	(0.051)	(0.053)
learning difficulties	0.042	0.029	0.304***	-0.066
	(0.065)	(0.058)	(0.053)	(0.054)
mental illness	0.053	0.136***	0.127***	0.285***
	(0.045)	(0.043)	(0.043)	(0.044)
other progressive illness	0.483***	0.523***	0.296***	0.366***
	(0.036)	(0.039)	(0.038)	(0.039)
other health problems, disabi	0.120***	-0.078***	-0.245***	0.114***
	(0.024)	(0.028)	(0.028)	(0.024)
number of health problems		0.298***	0.337***	0.265***
		(0.022)	(0.021)	(0.017)

Limitations due to health problems: hospital quality

	sickness	limit amount	limit kind	limit
DPV	absence	of paid work	of paid work	activity
hospital quality (each estimated independently)				
median waiting time	0.002	0.002	0.005*	0.004**
	(0.002)	(0.002)	(0.002)	(0.002)
mean waiting time	0.002	0.002	0.003*	0.003**
	(0.001)	(0.002)	(0.002)	(0.002)
unexpected mortality	-0.113	0.319	0.238	0.153
	(0.289)	(0.223)	(0.227)	(0.203)

Next steps

- Measurement of quality of health care provision
 - Benchmark waiting times relative to average for each treatment
- Choice in health care provision
 - Limit sample to small firms and occupations outside managerial & professional
- Quantify magnitudes on `productivity'
 - What if all hospitals met best practice?
 - Assess wage effects of limitations due to health problems