

Article title: The Impact of Devolution on Local Health System Financing: A Synthetic Difference-in-Differences Study of Greater Manchester, England

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Supplementary file 1

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Table S1: Clinical Commissioning Groups included in synthetic control group and weights

CCG code	CCG name	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	GM weight
05Y	NHS Walsall CCG	0	0	0	0	0.343	0.081	0.26	0	0	0.196	0.0999
02W	NHS Bradford City CCG	0.035	0.107	0.242	0.034	0.253	0	0.093	0	0.005	0.074	0.0789
05L	NHS Sandwell and West Birmingham CCG	0	0	0	0	0	0	0.003	0	0	0.311	0.0597
04C	NHS Leicester City CCG	0	0.037	0	0	0	0	0	0	0	0.237	0.0477
09P	NHS Hastings and Rother CCG	0	0.053	0.425	0	0	0	0	0	0	0	0.0387
04K	NHS Nottingham City CCG	0	0	0.039	0.33	0	0	0	0	0	0	0.0287
04N	NHS Rushcliffe CCG	0.071	0.32	0	0	0	0	0	0	0	0	0.0286
10V	NHS South Eastern Hampshire CCG	0	0	0	0	0	0.27	0	0	0	0	0.0278
12D	NHS Swindon CCG	0.101	0	0	0	0.052	0	0.05	0	0.059	0.003	0.0267
12F	NHS Wirral CCG	0	0	0	0	0	0	0.278	0	0	0	0.0254
01A	NHS East Lancashire CCG	0	0	0	0	0	0.142	0	0.125	0	0	0.0250
00N	NHS South Tyneside CCG	0	0.109	0	0.015	0	0	0	0.031	0.119	0	0.0248
05A	NHS Coventry and Rugby CCG	0	0	0	0	0	0	0	0	0.211	0	0.0243
03J	NHS North Kirklees CCG	0.237	0	0	0	0	0	0	0	0	0	0.0239
02P	NHS Barnsley CCG	0	0.114	0.046	0.093	0.052	0	0	0	0	0	0.0232
99C	NHS North Tyneside CCG	0	0	0	0	0	0	0	0.271	0	0	0.0226
06P	NHS Luton CCG	0	0	0	0	0	0.021	0	0.037	0.002	0.084	0.0215
09C	NHS Ashford CCG	0	0	0	0.225	0	0	0	0	0	0	0.0174
06A	NHS Wolverhampton CCG	0	0.033	0	0	0.11	0.042	0	0	0	0	0.0163
10C	NHS Surrey Heath CCG	0.16	0	0	0	0	0	0	0	0	0	0.0161
09D	NHS Brighton and Hove CCG	0	0	0	0	0	0	0.004	0	0	0.081	0.0158
02N	NHS Airedale, Wharfedale and Craven CCG	0	0	0	0.204	0	0	0	0	0	0	0.0157
01R	NHS South Cheshire CCG	0	0	0	0	0	0.027	0.113	0.031	0	0	0.0157

05X	NHS Telford and Wrekin CCG	0.148	0	0	0	0	0	0	0	0	0	0.0149
02X	NHS Doncaster CCG	0	0	0.127	0	0	0.033	0	0	0	0	0.0139
15F	NHS Leeds CCG	0	0	0	0	0	0.047	0	0.107	0	0	0.0138
04L	NHS Nottingham North and East CCG	0	0	0.066	0.017	0	0.046	0	0	0	0	0.0115
03H	NHS North East Lincolnshire CCG	0	0	0	0	0	0	0	0.028	0.078	0	0.0113
00C	NHS Darlington CCG	0	0	0	0	0	0	0.12	0	0	0	0.0109
10X	NHS Southampton CCG	0	0	0	0	0	0	0	0	0.071	0.014	0.0109
15C	NHS Bristol, North Somerset and South Gloucestershire CCG	0	0	0	0	0	0	0	0.129	0	0	0.0107
10L	NHS Isle of Wight CCG	0	0	0	0	0	0.101	0	0	0	0	0.0104
99G	NHS Southend CCG	0	0	0	0	0	0	0	0.124	0	0	0.0103
05F	NHS Herefordshire CCG	0	0.077	0	0	0	0	0	0	0.041	0	0.0099
05C	NHS Dudley CCG	0.089	0	0	0	0.009	0	0	0	0	0	0.0098
06D	NHS Wyre Forest CCG	0	0	0.017	0.07	0	0	0.008	0	0.012	0	0.0089
05J	NHS Redditch and Bromsgrove CCG	0	0	0	0	0	0	0	0	0.072	0	0.0083
05G	NHS North Staffordshire CCG	0	0	0	0	0	0.08	0	0	0	0	0.0082
03T	NHS Lincolnshire East CCG	0	0	0	0	0	0	0	0	0.07	0	0.0081
09E	NHS Canterbury and Coastal CCG	0	0	0	0	0	0.078	0	0	0	0	0.0080
01T	NHS South Sefton CCG	0	0.076	0	0	0	0.027	0	0	0	0	0.0079
02D	NHS Vale Royal CCG	0	0	0	0.012	0.073	0	0	0	0	0	0.0074
15D	NHS East Berkshire CCG	0.072	0	0	0	0	0	0	0	0	0	0.0073
11M	NHS Gloucestershire CCG	0	0	0	0	0	0	0.036	0.043	0	0	0.0069
05N	NHS Shropshire CCG	0.065	0	0	0	0	0	0	0	0	0	0.0066
04H	NHS Newark & Sherwood CCG	0	0	0	0	0	0	0	0	0.051	0	0.0059
09N	NHS Guildford and Waverley CCG	0	0	0	0	0	0	0	0	0.05	0	0.0058
05H	NHS Warwickshire North CCG	0	0	0	0	0	0	0	0	0.048	0	0.0055
11E	NHS Bath and North East Somerset CCG	0	0	0	0	0	0	0	0	0.044	0	0.0051
01F	NHS Halton CCG	0	0.073	0	0	0	0	0	0	0	0	0.0049
03F	NHS Hull CCG	0	0	0	0	0	0	0	0.048	0	0	0.0040

05D	NHS East Staffordshire CCG	0	0	0	0	0.041	0	0	0	0	0	0.0036
03V	NHS Corby CCG	0	0	0.039	0	0	0	0	0	0	0	0.0032
05Q	NHS South East Staffordshire and Seisdon Peninsula CCG	0	0	0	0	0.035	0	0	0	0	0	0.0031
10K	NHS Fareham and Gosport CCG	0	0	0	0	0.032	0	0	0	0	0	0.0028
01V	NHS Southport and Formby CCG	0	0	0	0	0	0	0	0	0.024	0	0.0028
05V	NHS Stafford and Surrounds CCG	0	0	0	0	0	0	0	0	0.022	0	0.0025
09F	NHS Eastbourne, Hailsham and Seaford CCG	0.023	0	0	0	0	0	0	0	0	0	0.0023
01C	NHS Eastern Cheshire CCG	0	0	0	0	0	0	0.016	0.007	0	0	0.0020
01H	NHS Cumbria CCG	0	0	0	0	0	0	0.019	0	0	0	0.0017
04V	NHS West Leicestershire CCG	0	0	0	0	0	0	0	0.018	0	0	0.0015
06H	NHS Cambridgeshire and Peterborough CCG	0	0	0	0	0	0	0	0	0.012	0	0.0014
00R	NHS Blackpool CCG	0	0	0	0	0	0.006	0	0	0	0	0.0006
03D	NHS Hambleton, Richmondshire and Whitby CCG	0	0	0	0	0	0	0	0	0.005	0	0.0006
00M	NHS South Tees CCG	0	0	0	0	0	0	0	0	0.004	0	0.0005

Table S1 presents weights for 65 CCGs (out of 149 CCGs in the Rest of England) with a non-zero weighting in the main analysis. Weights derived using the synthetic control method. W1-W10 show weights for each of the individual CCGs in Greater Manchester; GM weight shows overall weights for GM that are used in the main analysis. Abbreviations: CCG, Clinical Commissioning Group; GM, Greater Manchester.

Table S2: Predictor balance

	Greater Manchester	Rest of England*	Synthetic control[†]
Pre-devolution population composition			
Female %	0	2.57	0.88
Female age	0	2.29	0.75
Male age	0	2.29	0.75
2013 Per capita expenditure			
CCG acute	-8.14	-4.02	-5.31
CCG Continuing Healthcare	-4.74	-5.55	-4.63
CCG community healthcare	-5.48	-7.5	-5.27
CCG mental health	-2.37	-0.9	-2.05
CCG other	0.02	-5.09	-4.77
CCG primary care	-7.78	-3.61	-6.75
LA adult social care	7.52	1.75	2.58
LA children's social care	-10.9	-18.03	-15.5
LA public health	-7.54	-5.19	-6.46
2014 Per capita expenditure			
CCG acute	-1.48	0.29	-0.75
CCG Continuing Healthcare	0.94	-0.29	0.33
CCG community healthcare	-4.02	-2.48	-0.9
CCG mental health	-0.17	-0.91	0.09
CCG other	-10.98	-5.71	-8.92
CCG primary care	-0.56	1.37	0.46
LA adult social care	-6.19	-3.62	-4.86
LA children's social care	6.38	8.54	9.86
LA public health	-1.57	-1.61	-1.74
2015 Per capita expenditure			
CCG acute	9.62	3.73	6.06
CCG Continuing Healthcare	3.8	5.84	4.29
CCG community healthcare	9.5	9.97	6.17
CCG mental health	2.55	1.81	1.96
CCG other	10.95	10.8	13.7
CCG primary care	8.34	2.24	6.29
LA adult social care	-1.33	1.87	2.28
LA children's social care	4.52	9.49	5.64
LA public health	9.11	6.8	8.2

Table S2 shows the mean value of predictor variables used to define the synthetic control group. LA data is mapped to CCG level on the basis of overlapping populations. *London excluded from Rest of England. [†]Synthetic control group is a weighted average of 65 CCGs from Rest of England (excluding London). Abbreviations: CCG, Clinical Commissioning Group; LA, local authority. LA data is mapped to CCG level on the basis of overlapping populations.

Table S3: Tests of parallel trends

Outcome	F test P-value	Linear trend p-value
<i>Per capita expenditure</i>		
Total	0.41	0.82
CCG total	0.26	0.71
CCG primary care	0.64	0.54
CCG acute	0.86	0.62
CCG mental health	0.99	0.88
CCG Continuing Healthcare	0.78	0.90
CCG community health services	0.67	0.80
CCG other	0.13	0.57
LA total	0.60	0.44
LA adult social care	0.64	0.47
LA child social care	0.66	0.50
LA public health	0.70	0.48
<i>Shares of total health and care expenditure</i>		
CCG total	0.60	0.33
CCG primary care	0.39	0.17
CCG acute	0.57	0.80
CCG mental health	0.82	0.74
CCG Continuing Healthcare	0.49	0.59
CCG community health services	0.83	0.79
CCG other	0.09	0.62
LA total	0.60	0.33
LA adult social care	0.45	0.27
LA child social care	0.85	0.57
LA public health	0.44	0.31
<i>Shares of total CCG/LA expenditure</i>		
CCG primary care	0.41	0.19
CCG acute	0.40	0.81
CCG mental health	0.93	0.89
CCG Continuing Healthcare	0.61	0.72
CCG community health services	0.79	0.83
CCG other	0.07	0.57
LA adult social care	0.84	0.56
LA child social care	0.94	0.76
LA public health	0.44	0.25

Table S3 presents results of an F test of the joint significance of differences in expenditure in each period, and a test of the differences between linear trends in expenditure throughout the pre-devolution period (2013/14 to 2019/20). Sample (N=225) includes 10 CCGs in GM and weighted combination of 65 CCGs from the rest of England over a 3-year period. Abbreviations: CCG, Clinical Commissioning group; LA, Local Authority.